FCC REPORT

Applicant:	Alleswolke Inc.
Address of Applicant:	39899 Balentine Drive Suite 200, Newark, CA, USA 94536
Equipment Under Test (EUT)	
Product Name:	alleswolke LTE Dashcam
Model No.:	UCM 3310, UCM 3320, UCM 3300, UCM 4300
FCC ID:	2AOYPUCM3310
Applicable standards:	FCC CFR Title 47 Part 22 Subpart H FCC CFR Title 47 Part 24 Subpart E
Date of sample receipt:	22 Jan., 2018
Date of Test:	22 Jan., to 09 Mar., 2018
Date of report issued:	09 Mar., 2018
Test Result:	PASS*

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

Authorized Signature:

Bruce Zhang
Laboratory Manager

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

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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2. Version

Version No.	Date	Description
00	*09 Mar., 2018*	*Original*

Prepared by:	***Report Clerk***	***Date:***	*09 Mar., 2018*
Reviewed by:	***Project Engineer***	***Date:***	*09 Mar., 2018*

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4. Test Summary

Test Item	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Passed* (Please refer to SAR Report)
RF Output Power	Part 2.1046 Part 22.913 (a)(2) Part 24.232 (c)	Pass
Peak-to-Average Ratio	Part 24.232(d)	Pass
Modulation Characteristics	Part 2.1047	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917 Part 24.238	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 22.917 (a) Part 24.238 (a)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a)	Pass
Out of band emission, Band Edge	Part 22.917 (a) Part 24.238 (a)	Pass
Frequency stability vs. temperature	Part 22.355 Part 24.235 Part 2.1055(a)(1)(b)	Pass
Frequency stability vs. voltage	Part 22.355 Part 24.235 Part 2.1055(d) (2)	Pass
Pass: The EUT complies with the essential requirements in the standard.		

5. General Information

5.1 Client Information

Applicant:	Alleswolke Inc.
Address of Applicant:	39899 Balentine Drive Suite 200, Newark, CA, USA 94536
Manufacturer :	Nanjing Miaoow Planet Technology Co., Ltd.
Address of Manufacturer:	Building 4 SEU Science Park Changjianghou St Xuanwu Nanjing

5.2 General Description of E.U.T.

Product Name:	alleswolke LTE Dashcam
Model No.:	UCM 3310, UCM 3320, UCM 3300, UCM 4300
Operation Frequency range:	BC 0: 824.70MHz-848.31MHz BC 1: 1851.25MHz-1908.75MHz
Modulation type:	1×RTT: BPSK, QPSK, OQPSK, HPSK 1×EVDO: BPSK, QPSK, 8PSK, 16-QAM
Antenna type:	Internal Antenna
Antenna gain:	BC 0: 2 dBi BC 1: 2 dBi
Power supply:	DC 12V
AC adapter:	Model: WSD-1202000-P07 Input: AC 100-240V, 50/60Hz, 0.6A Output: DC 12V, 2.0A
Remark:	The No.: UCM 3310, UCM 3320, UCM 3300, UCM 4300 were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name and color.

Operation Frequency List:

BC 0		BC 1	
Channel:	Frequency (MHz)	Channel:	Frequency (MHz)
1013	824.70	25	1851.25
1014	824.73	26	1851.28
….	….	….	….
383	836.49	599	1879.97
384	836.52	600	1880
385	836.55	601	1880.03
…	…	…	…
776	848.28	1174	1908.72
777	848.31	1175	1908.75

Regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

BC 0			BC 1		
Channel No.		Frequency(MHz)	Channel No.		Frequency(MHz)
Lowest channel	1013	824.70	Lowest channel	25	1851.25
Middle channel	384	836.52	Middle channel	600	1880.00
Highest channel	777	848.31	Highest channel	1175	1908.75

5.3 Test modes

Operating Environment:	
Temperature:	Normal: 15℃ ~ 35℃, Extreme: -30℃ ~ +50℃
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar
Voltage:	Nominal: 120Vac, Extreme: Low 90 Vac, High 135 Vac
Test mode:	
Communicate mode (BC 0 1×RTT)	Keep the EUT in communicating mode on BC 0 (RC3~RC5).
Data mode (BC 0 1×EV-DO Rev.0)	Keep the EUT in data communicating mode on BC 0 Rev.0 mode.
Data mode (BC 01×EV-DO Rev. A)	Keep the EUT in data communicating mode on BC 0 Rev.A mode.
Communicate mode (BC 1 1×RTT)	Keep the EUT in communicating mode on BC 1(RC3~RC5).
Data mode (BC 1 1×EV-DO Rev. 0)	Keep the EUT in data communicating mode on BC 1 Rev.0 mode.
Data mode (BC 1 1×EV-DO Rev. A)	Keep the EUT in data communicating mode on BC 1 Rev.A mode.

Remark:
1. Pre-scan all test modes, and found the RC3, SO55 for Cell band, RC3 and SO2 for PCS band were the worst case.
2. The EUT has been tested under continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes with power adaptor, earphone and Data cable. Just the worst case position (H mode) shown in report.

5.4 Description of Support Units

Test Equipment	Manufacturer	Model No.	Serial No.
Simulated Station	Anritsu	MT8820C	6201026545

5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Radiated Emission (9kHz ~ 30MHz)	4.24 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	4.35 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	4.44 dB (k=2)
Radiated Emission (18GHz ~ 26.5GHz)	4.56 dB (k=2)
Radiated Emission (18GHz ~ 26.5GHz)	4.56 dB (k=2)

5.6 Laboratory Facility

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

- **FCC - Registration No.: 727551**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The Registration No. is 727551.

- **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

5.7 Laboratory Location

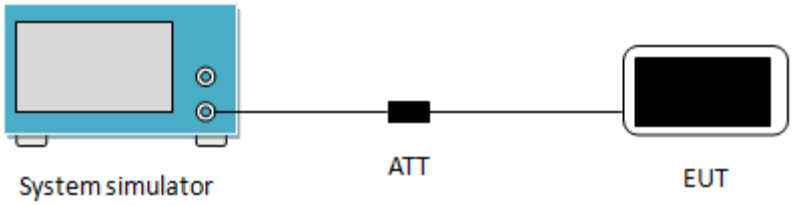
Shenzhen Zhongjian Nanfang Testing Co., Ltd.
Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
Bao'an District, Shenzhen, Guangdong, China
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

5.8 Test Instruments list

Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
Biconical Antenna	SCHWARZBECK	VUBA9117	359	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
Horn Antenna	SCHWARZBECK	BBHA9120D	916	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
EMI Test Software	AUDIX	E3	6.110919b	N/A	N/A
Pre-amplifier	HP	8447D	2944A09358	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
Pre-amplifier	CD	PAP-1G18	11804	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
Spectrum Analyzer	Agilent	N9020A	MY50510123	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
Signal Generator	Rohde & Schwarz	SMX	835454/016	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
Signal Generator	R&S	SMR20	1008100050	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
RF Switch Unit	MWRFTEST	MW200	N/A	N/A	N/A
Cable	ZDECL	Z108-NJ-NJ-81	1608458	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
Cable	MICRO-COAX	MFR64639	K10742-5	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
Cable	SUHNER	SUCOFLEX100	58193/4PE	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
DC Power Supply	XinNuoEr	WYK-10020K	1409050110020	02-25-2017	02-24-2018
				02-25-2018	02-24-2019
Temperature Humidity Chamber	HengPu	HPGDS-500	20140828008	09-24-2017	09-23-2018
Simulated Station	Rohde & Schwarz	CMW500	140493	02-25-2017	02-24-2018
				02-25-2018	02-24-2019

6. Test results

6.1 Conducted Output Power

Test Requirement:	FCC part 22.913(a)(2), FCC part 24.232(c), FCC part 27.50(d)(4)
Test Method:	ANSI/TIA-603-D 2010
Limit:	BC 0: 7W BC 1: 2W
Test setup:	
Test Procedure:	The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the simulated station. Transmitter output power was read off in dBm.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

RF OUTPUT POWER FOR 1×RTT:

EUT Mode	Radio Configuration (RC)	Service Option (SO)	Conducted Output Power(dBm)			Limit (dBm)
			Ch.1013	Ch.384	Ch.777	
			824.70MHz	836.52MHz	848.31MHz	
BC 0	RC3	02(Loopback)	23.90	23.86	23.94	38.45
		55(Loopback)	23.93	23.94	24.02	
	RC4	02(Loopback)	23.90	23.94	24.01	
		55(Loopback)	23.89	23.93	24.04	
	RC5	02(Loopback)	23.90	23.89	23.96	
		55(Loopback)	23.91	23.95	24.05	
EUT Mode	Radio Configuration (RC)	Service Option (SO)	Conducted Output Power(dBm)			Limit (dBm)
			Ch.25	Ch.600	Ch.1175	
			1851.25MHz	1880MHz	1908.75MHz	
BC 1	RC3	02(Loopback)	23.46	23.61	23.46	33.00
		55(Loopback)	23.43	23.64	23.47	
	RC4	02(Loopback)	23.33	23.64	23.43	
		55(Loopback)	23.45	23.67	23.44	
	RC5	02(Loopback)	23.41	23.69	23.41	
		55(Loopback)	23.45	23.69	23.43	

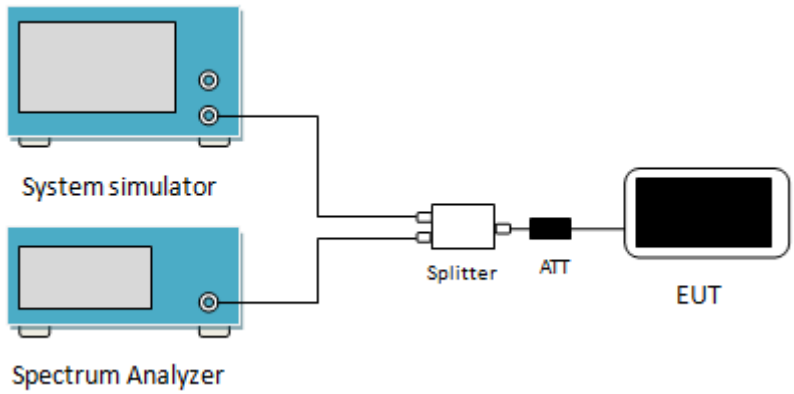
RF OUTPUT POWER FOR CDMA2000 1×EV-DO Rev.0:

EUT Mode	FTAP Rate	RTAP Rate	Channel	Frequency (MHz)	Conducted Output Power(dBm)	Limit (dBm)
BC 0	307.2kbps (2slot,QPSK)	153.6kbps	1013	824.70	23.86	38.45
			384	836.52	23.90	
			777	848.31	23.91	
EUT Mode	FTAP Rate	RTAP Rate	Channel	Frequency (MHz)	Conducted Output Power(dBm)	Limit (dBm)
BC 1	307.2kbps (2slot,QPSK)	153.6kbps	25	1851.25	23.56	33.00
			600	1880.00	23.63	
			1175	1908.75	23.62	

RF OUTPUT POWER FOR CDMA2000 1×EV-DO Rev.A:

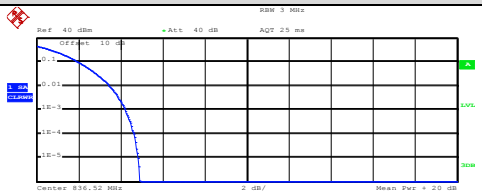
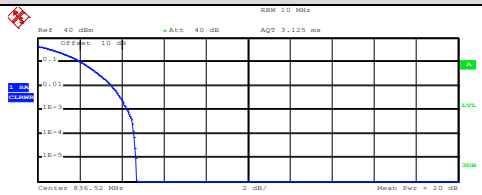
EUT Mode	FETAP-Traffic Format	RETAP-Data Payload Size	Channel	Frequency (MHz)	Conducted Output Power(dBm)	Limit (dBm)
BC 0	307.2k,QPSK/ACK Channel is transmitted at all the slots	4096	1013	824.70	23.89	38.45
			384	836.52	23.86	
			777	848.31	23.90	
EUT Mode	FETAP-Traffic Format	RETAP-Data Payload Size	Channel	Frequency (MHz)	Conducted Output Power(dBm)	Limit (dBm)
BC 1	307.2k,QPSK/ACK Channel is transmitted at all the slots	4096	25	1851.25	23.61	33.00
			600	1880.00	23.58	
			1175	1908.75	23.54	

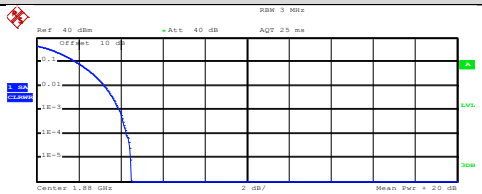
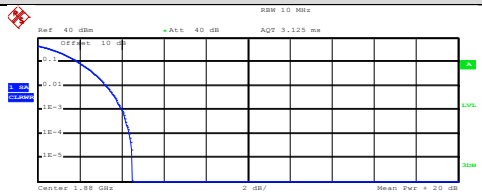
6.2 Peak-to-Average Ratio

Test Requirement:	FCC part 24.232(d)
Test Method	ANSI/TIA-603-D 2010
Limit:	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
Test setup:	
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 Set the CCDF option in spectrum analyzer, RBW ≥ OBW, 3 Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level. 4 Repeat step 1~3 at other frequency and modulations.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

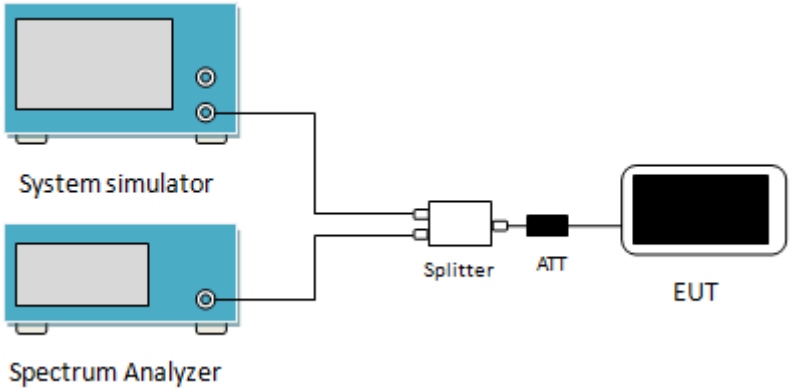
Band Class	Test config.	Channel No.	PAPR	Result
Middle channel				
BC 0	1xRTT	384	4.24	Pass
	EVDO	384	4.28	Pass
Middle channel				
BC 1	1xRTT	600	3.96	Pass
	EVDO	600	4.04	Pass
Note: Only the worst case mode was shown in report.				

Test plots as below:

BC 0: Middle Channel	
1xRTT	EVDO
 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 23.18 dBm Peak 28.08 dBm Crest 4.90 dB 10 % 2.00 dB 1 % 3.48 dB .1 % 4.24 dB .01 % 4.64 dB Date: 1.FEB.2018 12:21:02	 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 23.45 dBm Peak 28.15 dBm Crest 4.69 dB 10 % 2.08 dB 1 % 3.52 dB .1 % 4.28 dB .01 % 4.60 dB Date: 1.FEB.2018 12:20:42

BC 1: Middle Channle	
1xRTT	EVDO
 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 22.67 dBm Peak 27.16 dBm Crest 4.49 dB 10 % 1.92 dB 1 % 3.24 dB .1 % 3.96 dB .01 % 4.28 dB Date: 1.FEB.2018 12:12:46	 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 22.86 dBm Peak 27.37 dBm Crest 4.51 dB 10 % 1.96 dB 1 % 3.28 dB .1 % 4.04 dB .01 % 4.36 dB Date: 1.FEB.2018 12:13:09

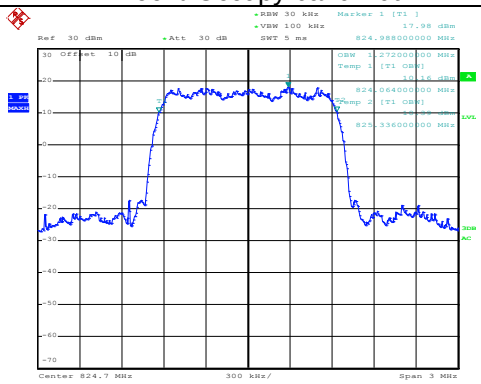
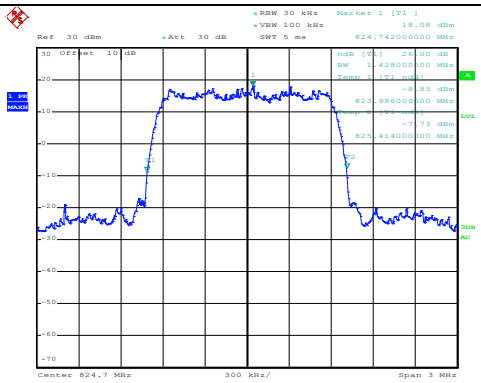
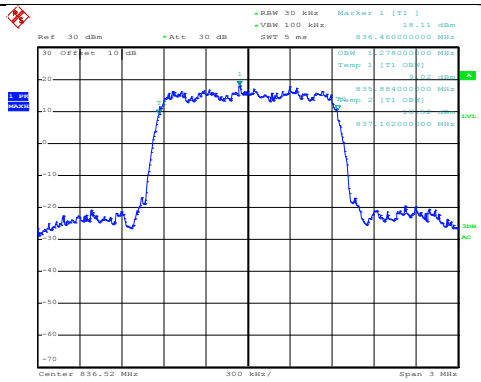
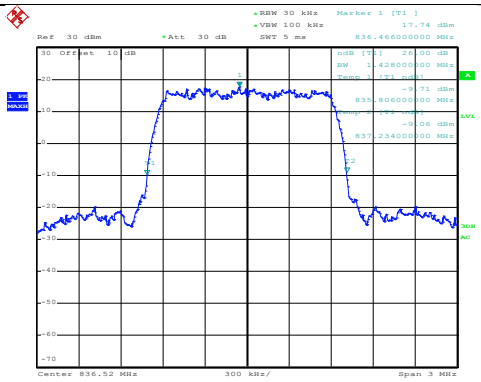
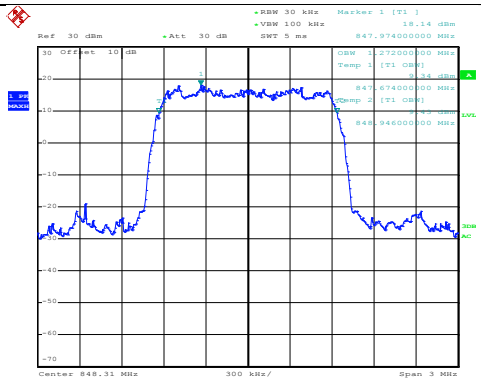
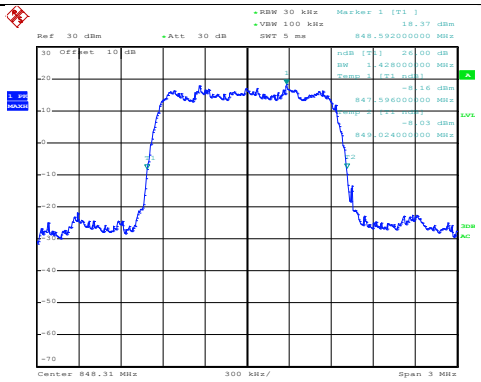
6.3 Occupy Bandwidth

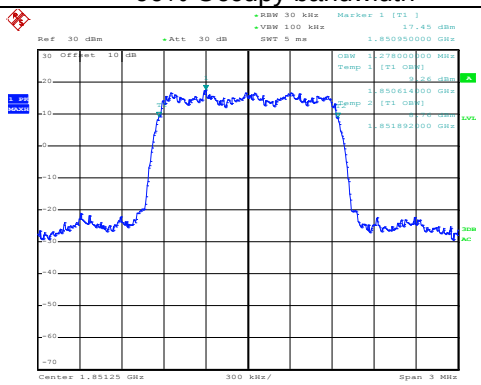
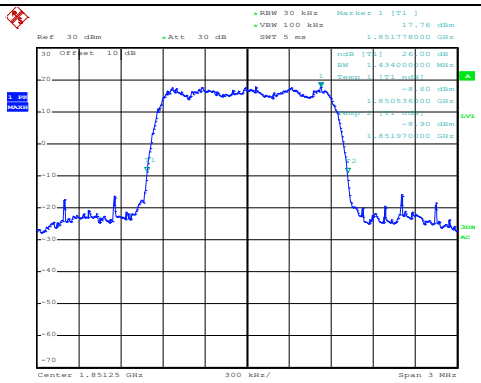
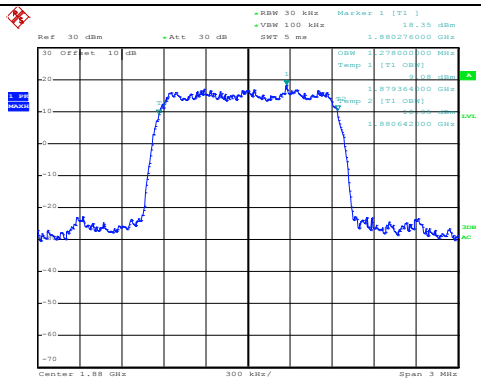
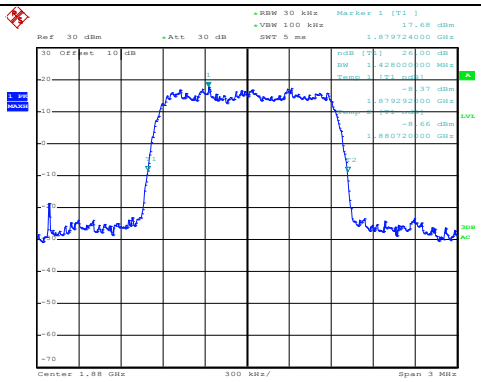
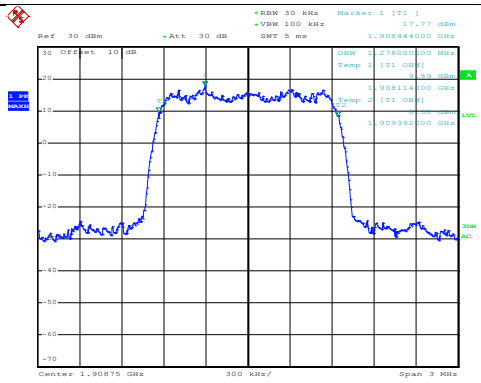
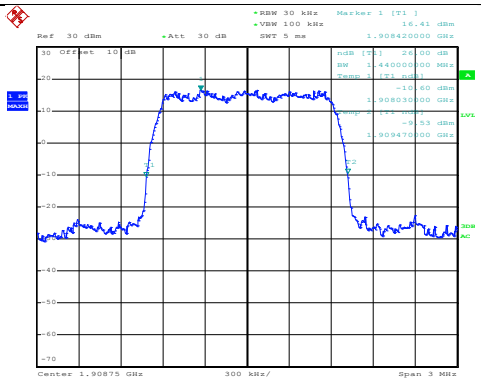
Test Requirement:	FCC part 22.917(b), FCC part 24.238(b)
Test Method:	ANSI/TIA-603-D 2010
Test setup:	
Test Procedure:	1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer 2. RBW was set to about 1% of emission BW, VBW= 3 times RBW. 3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
BC 0	1013	824.70	1278	1428
	384	836.52	1278	1428
	777	848.31	1272	1428
BC 1	25	1851.25	1278	1434
	600	1880.00	1278	1428
	1175	1908.75	1278	1440

Test plot as follows:

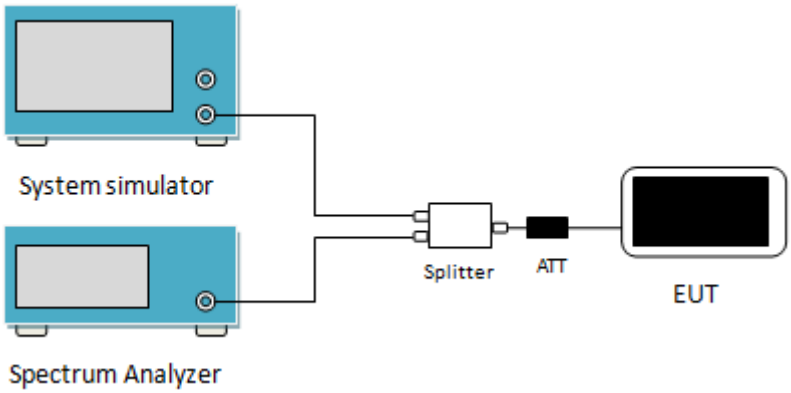
Test Mode: BC 0	
99% Occupy bandwidth	26dB Emission Bandwidth
	
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
Highest channel	Highest channel

Test Mode: BC 1	
99% Occupy bandwidth	26dB Emission Bandwidth
	
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
Highest channel	Highest channel

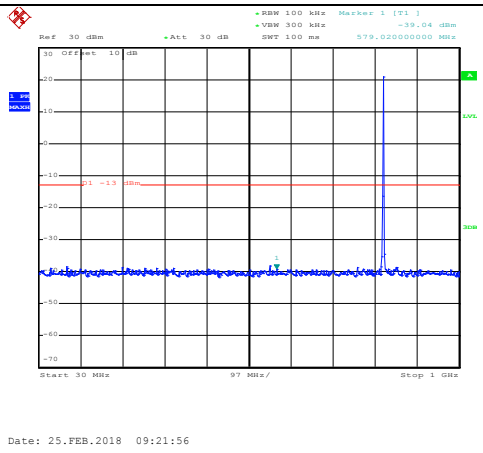
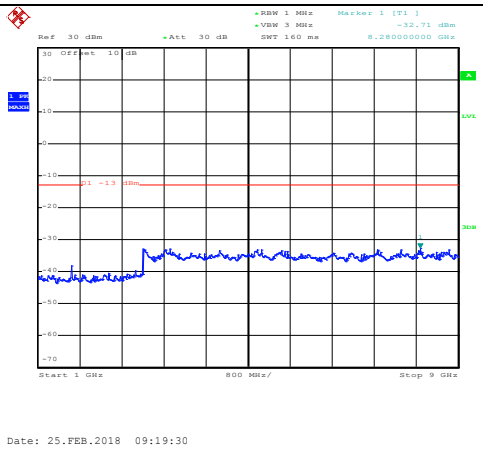
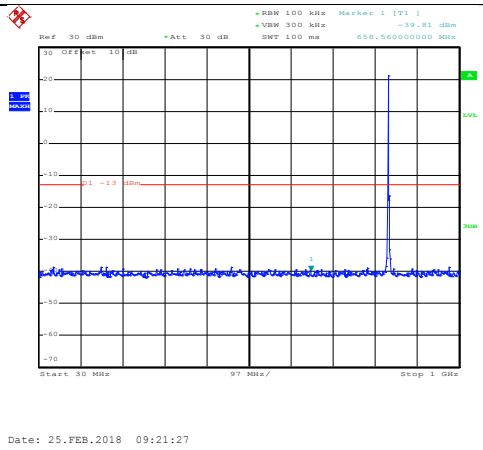
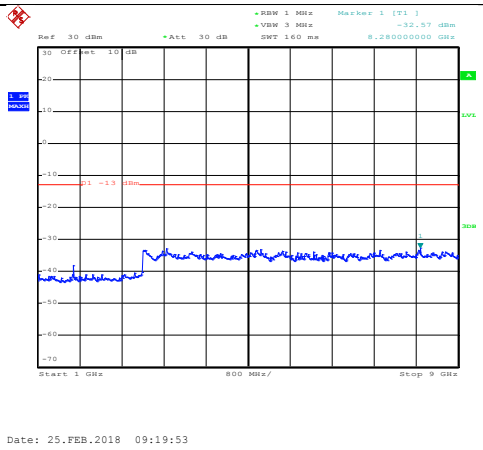
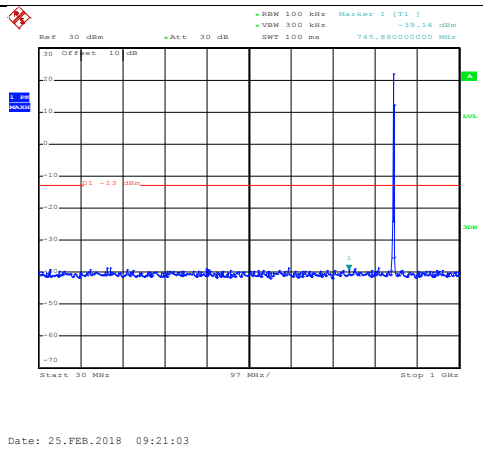
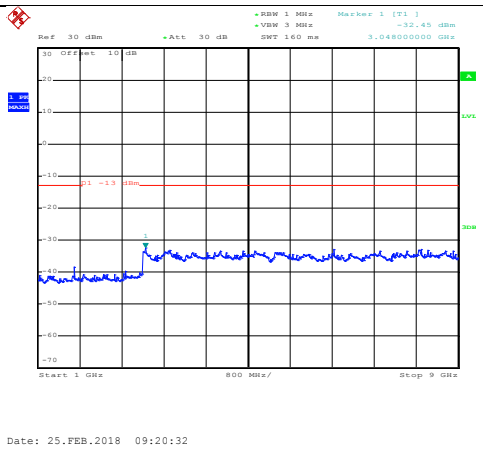
6.4 Modulation Characteristic

According to FCC § 2.1047(d), Part 22H & 24E & 27L there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

6.5 Out of band emission at antenna terminals

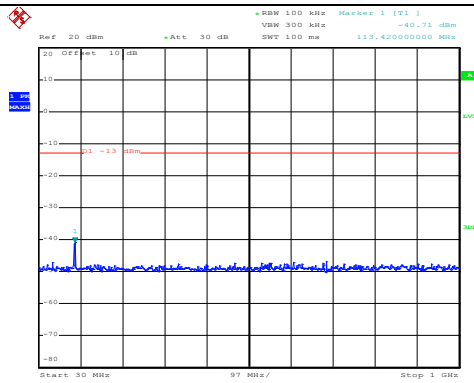
Test Requirement:	FCC part 22.917(a), FCC part 24.238(a)
Test Method:	ANSI/TIA-603-D 2010
Limit:	-13dBm
Test setup:	
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 The resolution bandwidth of the spectrum analyzer was set at 100 kHz when below 1GHz, 1MHz when above 1 GHz; sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic. 3 For the out of band: Set the RBW=100 kHz, VBW=300 kHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, Start=30MHz, Stop= 10th harmonic. 4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plots as follows (Spurious emission):

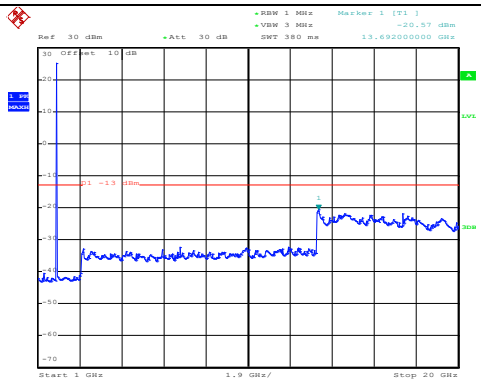
Test Mode: BC 0	
Lowest Channel	
	
30MHz~1GHz	1GHz~9GHz
Middle channel	
	
30MHz~1GHz	1GHz~9GHz
Highest Channel	
	
30MHz~1GHz	1GHz~9GHz

Test Mode: BC 1

Lowest Channel

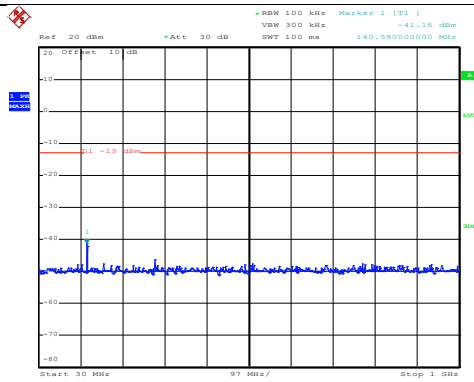


30MHz~1GHz

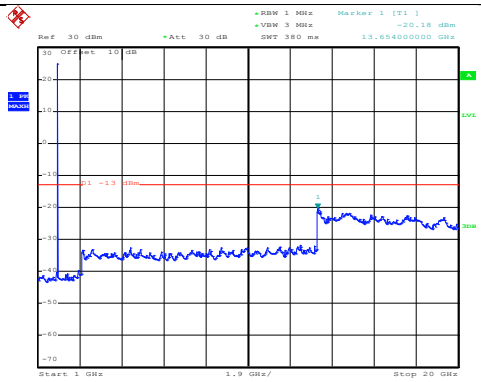


1GHz~20GHz

Middle channel

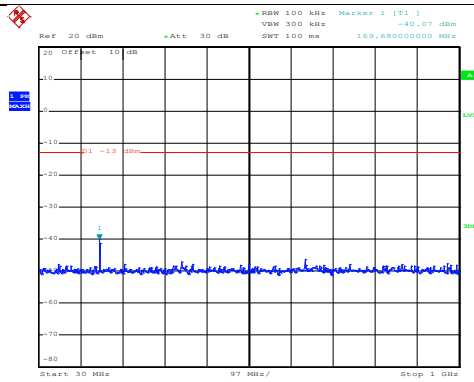


30MHz~1GHz

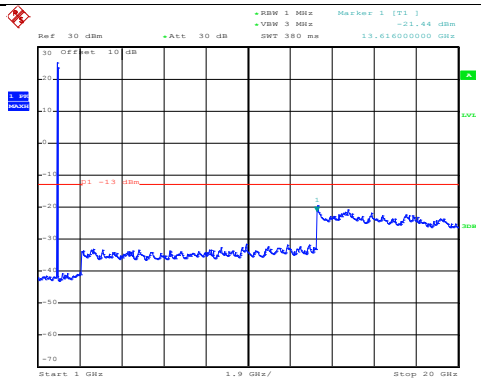


1GHz~20GHz

Highest Channel



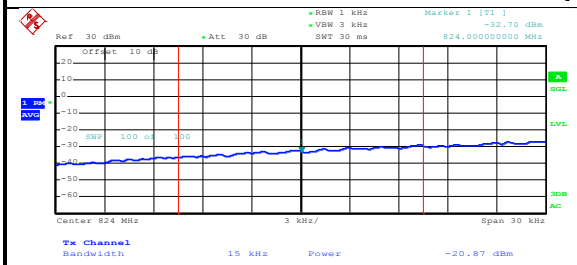
30MHz~1GHz



1GHz~20GHz

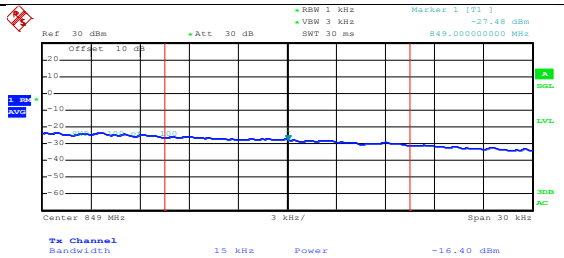
Band edge emission:

Test Mode: BC 0



Date: 25.FEB.2018 13:52:53

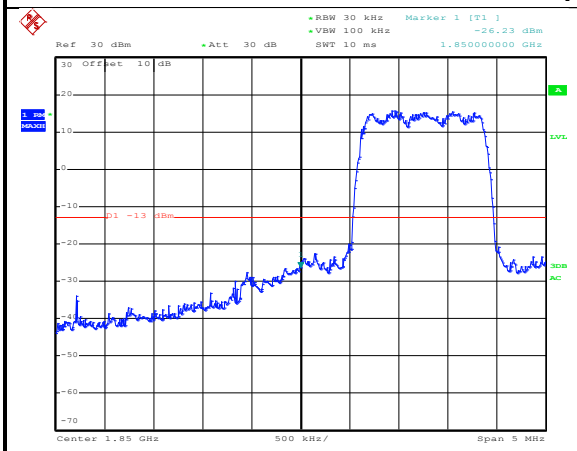
Lowest channel



Date: 25.FEB.2018 13:53:58

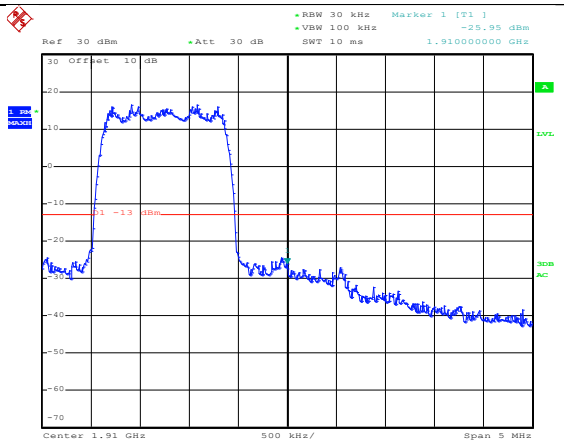
Highest channel

Test Mode: BC 1



Date: 25.FEB.2018 13:58:23

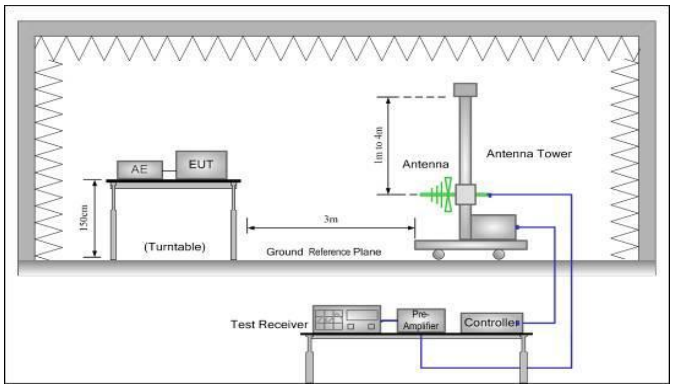
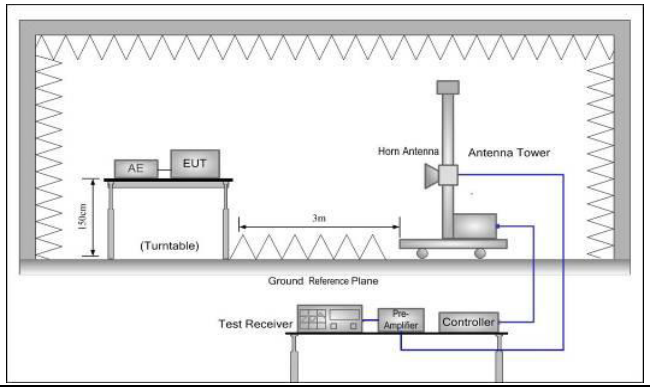
Lowest channel



Date: 25.FEB.2018 13:57:37

Highest channel

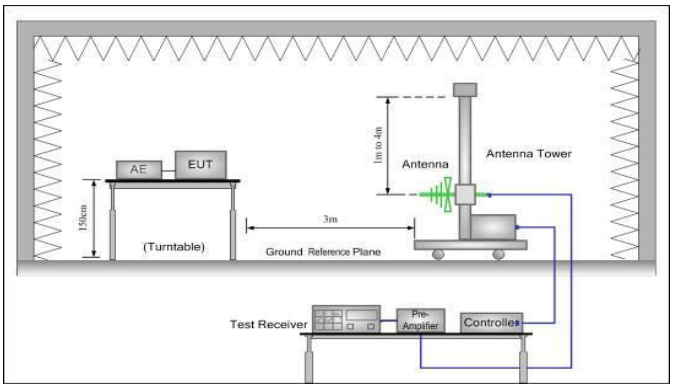
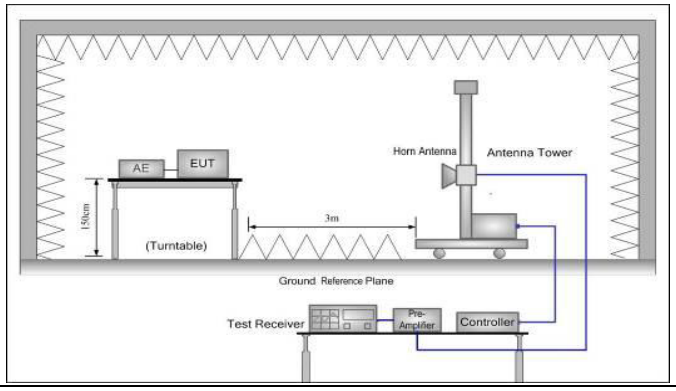
6.6 ERP, EIRP Measurement

Test Requirement:	FCC part 22.913(a)(2), FCC part 24.232(c)
Test Method:	ANSI/TIA-603-D 2010
Limit:	BC 0: 7W BC 1: 2W
Test setup:	Below 1GHz  Above 1GHz 
Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated. 3. ERP in frequency band 824.2 –848.80.8MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows: ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable Loss (dB) 4. EIRP in frequency band 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows: EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable Loss (dB) 5. The worst case was relating to the conducted output power.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data (worst case):

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
BC 0	384	H	V	23.35	38.45	Pass
			H	17.97		
		E1	V	23.28		
			H	17.89		
		E2	V	23.24		
			H	17.75		
EUT mode	**Channel**	**EUT Pol.**	**Antenna Pol.**	**EIRP(dBm)**	**Limit (dBm)**	**Result**
BC 1	600	H	V	27.89	33.00	Pass
			H	20.17		
		E1	V	27.67		
			H	20.15		
		E2	V	27.58		
			H	20.12		

6.7 Field strength of spurious radiation measurement

Test Requirement:	FCC part 22.917(a), FCC part 24.238(a)
Test Method:	ANSI/TIA-603-D 2010
Limit:	-13dBm
Test setup:	Below 1GHz  Above 1GHz 
Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method. 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. ERP / EIRP = S.G. output (dBm) + Antenna Gain(dB/dBi) – Cable Loss (dB)
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details.
Test results:	Passed

Measurement Data (worst case):

BC 0				
Lowest channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1649.40	Vertical	-28.87	-13.00	Pass
2474.10	V	-25.43		
3298.80	V	-51.08		
4123.50	V	-49.67		
1649.40	Horizontal	-29.96	-13.00	Pass
2474.10	H	-25.54		
3298.80	H	-50.64		
4123.50	H	-49.63		
Middle channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.04	Vertical	-29.45	-13.00	Pass
2509.56	V	-25.37		
3346.08	V	-50.37		
4182.60	V	-49.74		
1673.04	Horizontal	-29.50	-13.00	Pass
2509.56	H	-26.01		
3346.08	H	-50.60		
4182.60	H	-49.23		
Highest channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1696.62	Vertical	-29.32	-13.00	Pass
2544.93	V	-25.21		
3393.24	V	-48.48		
4241.55	V	-48.64		
1696.62	Horizontal	-29.74	-13.00	Pass
2544.93	H	-25.42		
3393.24	H	-48.83		
4241.55	H	-49.98		

Remark:

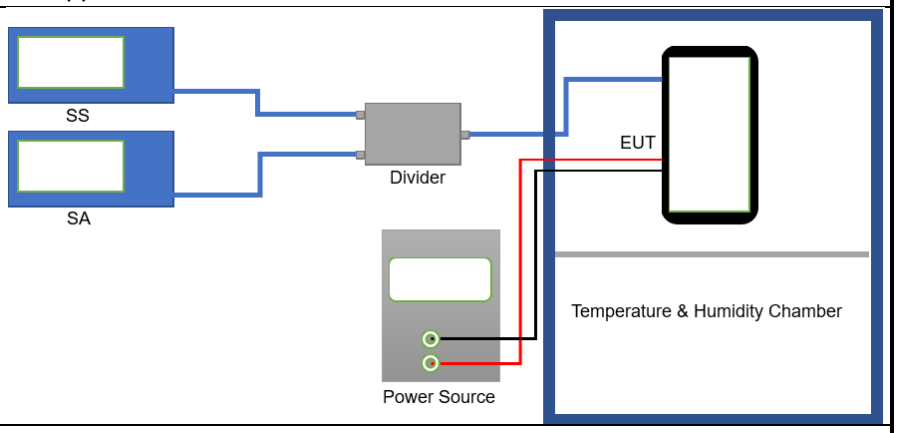
1. *The emission levels of below 1 GHz are very lower than the limit and not show in test report.*

BC 1				
Lowest channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3702.50	Vertical	-49.86	-13.00	Pass
5553.75	V	-43.55		
7405.00	V	-39.25		
9256.25	V	-37.78		
3702.50	Horizontal	-49.90	-13.00	Pass
5553.75	H	-43.59		
7405.00	H	-40.20		
9256.25	H	-37.79		
Middle channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-51.18	-13.00	Pass
5640.00	V	-43.77		
7520.00	V	-42.28		
9400.00	V	-40.07		
3760.00	Horizontal	-51.17	-13.00	Pass
5640.00	H	-43.15		
7520.00	H	-41.97		
9400.00	H	-39.77		
Highest channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3817.50	Vertical	-50.58	-13.00	Pass
5726.25	V	-42.51		
7635.00	V	-41.08		
9543.75	V	-38.97		
3817.50	Horizontal	-50.35	-13.00	Pass
5726.25	H	-43.18		
7635.00	H	-40.40		
9543.75	H	-38.19		

Remark:

1. *The emission levels of below 1 GHz are very lower than the limit and not show in test report.*

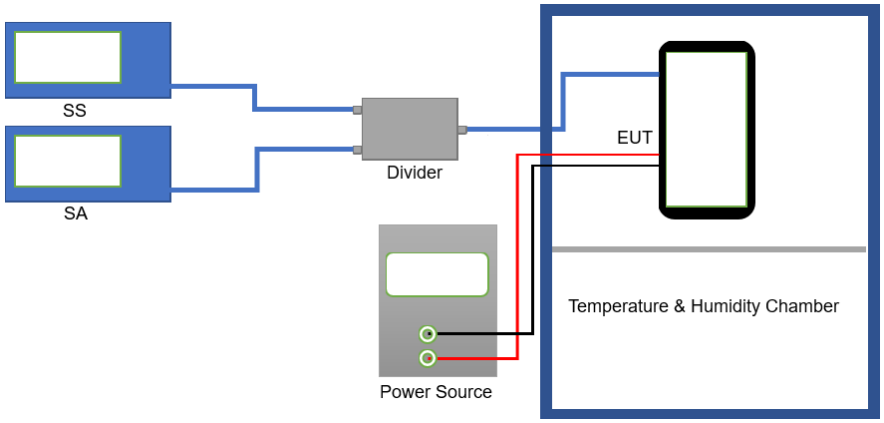
6.8 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part 22.355, FCC Part 24.235, FCC Part 2.1055(a)(1)(b)
Test Method:	ANSI/TIA-6-3-D 2010
Limit:	±2.5 ppm
Test setup:	
Test procedure:	1. The equipment under test was connected to an external DC power supply and input rated voltage. 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. 3. The EUT was placed inside the temperature chamber. 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25℃ operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to –30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data (the worst channel):

Reference Frequency: BC 0 Middle channel=384 channel=836.52MHz					
Power supplied (Vac)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
120	-30	166	0.198441	±2.5	Pass
	-20	158	0.188878		
	-10	127	0.151819		
	0	138	0.164969		
	10	143	0.170946		
	20	118	0.141061		
	30	122	0.145842		
	40	123	0.147038		
	50	130	0.155406		
Reference Frequency: PCS1900 Middle channel=661 channel=1880MHz					
Power supplied (Vac)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
120	-30	154	0.081915	±2.5	Pass
	-20	134	0.071277		
	-10	143	0.076064		
	0	124	0.065957		
	10	120	0.063830		
	20	128	0.068085		
	30	121	0.064362		
	40	116	0.061702		
	50	127	0.067553		
Note: Only the worst case shown in the report.					

6.9 Frequency stability V.S. Voltage measurement

Test Requirement:	FCC Part 22.355, FCC Part 24.235, FCC Part 2.1055(d)(2)
Test Method:	ANSI/TIA-603-D 2010
Limit:	±2.5ppm
Test setup:	
Test procedure:	1. Set chamber temperature to 25℃. Use a variable DC power source to power the EUT and set the voltage to rated voltage. 2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 3. Reduce the input voltage to specify extreme voltage variation (+/-15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data (the worst channel):

Reference Frequency: BC 0 Middle channel=384 channel=836.52MHz					
Temperature (℃)	Power supplied (Vac)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	135	102	0.121934	±2.5	Pass
	120	95	0.113566		
	90	99	0.118347		
Reference Frequency: BC 1 Middle channel=600 channel=1880MHz					
Temperature (℃)	Power supplied (Vac)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	135	126	0.067021	±2.5	Pass
	120	110	0.058511		
	90	115	0.061170		
Note: Only the worst case shown in the report.					