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FCC REPORT

Report Reference No. ..... :	**TRE1801017105**	R/C…….: 67477
FCC ID ..... :	**2AEY7-S8A003**	
Applicant's name ..... :	**Bak USA Technologies Corp.**	
Address.....:	425 Michigan Avenue,Buffalo,New York 14203,USA	
Manufacturer.....:	Bak USA Technologies Corp.	
Address.....:	425 Michigan Avenue,Buffalo,New York 14203,USA	
Test item description ..... :	**Tablet PC**	
Trade Mark .....:	-	
Model/Type reference.....:	LTE Barcode 1.0	
Listed Model(s) .....:	-	
Standard ..... :	**FCC Part 24: PERSONAL COMMUNICATIONS SERVICES** **FCC Part 27: MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES**	
Date of receipt of test sample…….:	Jan.22,2018	
Date of testing……...:	Jan.23,2018- Feb.06,2018	
Date of issue……:	Feb.07,2018	
Result..... ……...:	**Pass**	
Compiled by (position+printedname+signature)...:	File administrators Candy Liu	Candy Liu
Supervised by (position+printedname+signature)....:	Project Engineer : Edward Pan	Edward.Pan
Approved by (position+printedname+signature)....:	Manager Hans Hu	Hans Hu
Testing Laboratory Name ..... :	**Shenzhen Huatongwei International Inspection Co., Ltd.**	
Address.....:	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China	

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Contents

1. Test standards and Report version

1.1. Applicable Standards

The tests were performed according to following standards:

FCC Part 24:PUBLIC MOBILE SERVICES
FCC Part 27:MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES
FCC Part 2:FREQUENCY ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REG-ULATIONS
KDB 971168 D01 Power Meas License Digital Systems v03:provides a methodology for fully characterizing the fundamental power of wideband (> 1 MHz) digitally modulated RF signals acceptable to the FCC for demonstrating compliance for licensed transmitters.

1.2. Report version

Version No.	Date of issue	Description
00	Feb.07,2018	Original

2. Test Description

Test Item	Section in CFR 47	Result	Test Engineer
Radiated Spurious Emissions	Part 2.1053 Part 24.238 Part 27.53	Pass	William Wang

Note: The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Client Information

Applicant:	Bak USA Technologies Corp.
Address:	425 Michigan Avenue,Buffalo,New York 14203,USA
Manufacturer:	Bak USA Technologies Corp.
Address:	425 Michigan Avenue,Buffalo,New York 14203,USA

3.2. Product Description

Name of EUT:	Tablet PC
Trade Mark:	-
Model No.:	LTE Barcode 1.0
Listed Model(s):	-
Power supply:	DC 3.7V From exchange battery
Adapter information:	Input: 100-240Va.c., 50/60Hz, 0.6A Output: 5Vd.c.,5A
Hardware version:	1.0
Software version:	1607
RF Technical Description	
☒FDD Band 2	
Operation Frequency:	Uplink:1850.7 MHz – 1909.3 MHz Downlink: 1930.7 MHz – 1989.3 MHz
Channel bandwidth:	☒1.4MHz ☒ 3MHz ☒ 5MHz ☒ 10MHz ☒15MHz ☒20MHz
☒FDD Band 4	
Operation Frequency:	Uplink:1710.7 MHz – 1754.3 MHz Downlink: 2110.7 MHz – 2154.3 MHz
Channel bandwidth:	☒1.4MHz ☒ 3MHz ☒ 5MHz ☒ 10MHz ☒15MHz ☒20MHz
☒FDD Band 13	
Operation Frequency:	Uplink:777 MHz – 787 MHz Downlink: 746 MHz – 756 MHz
Channel bandwidth:	☐1.4MHz ☐ 3MHz ☒ 5MHz ☒ 10MHz ☐15MHz ☐20MHz
Power Class:	☐ Class 1 ☐ Class 2 ☒ Class 3 ☐ Class 4
Modulation type:	☒QPSK ☒16QAM ☐64QAM
Antenna type	Integral antenna
Antenna Gain	0.5dBi

3.3. Operation state

➢ **Test frequency list**

FDD Band 2

Test Frequency ID	Bandwidth [MHz]	N_{UL}	Frequency of Uplink [MHz]	N_{DL}	Frequency of Downlink [MHz]
Low Range	1.4	18607	1850.7	607	1930.7
	3	18615	1851.5	615	1931.5
	5	18625	1852.5	625	1932.5
	10	18650	1855	650	1935
	15 [1]	18675	1857.5	675	1937.5
	20 [1]	18700	1860	700	1940
Mid Range	1.4/3/5/10 15 [1]/20 [1]	18900	1880	900	1960
High Range	1.4	19193	1909.3	1193	1989.3
	3	19185	1908.5	1185	1988.5
	5	19175	1907.5	1175	1987.5
	10	19150	1905	1150	1985
	15 [1]	19125	1902.5	1125	1982.5
	20 [1]	19100	1900	1100	1980

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

FDD Band 4

Test Frequency ID	Bandwidth [MHz]	N_{UL}	Frequency of Uplink [MHz]	N_{DL}	Frequency of Downlink [MHz]
Low Range	1.4	19957	1710.7	1957	2110.7
	3	19965	1711.5	1965	2111.5
	5	19975	1712.5	1975	2112.5
	10	20000	1715	2000	2115
	15	20025	1717.5	2025	2117.5
	20	20050	1720	2050	2120
Mid Range	1.4/3/5/10/15/20	20175	1732.5	2175	2132.5
High Range	1.4	20393	1754.3	2393	2154.3
	3	20385	1753.5	2385	2153.5
	5	20375	1752.5	2375	2152.5
	10	20350	1750	2350	2150
	15	20325	1747.5	2325	2147.5
	20	20300	1745	2300	2145

FDD Band 13

Test Frequency ID	Bandwidth [MHz]	N_{UL}	Frequency of Uplink[MHz]	N_{DL}	Frequency of Downlink[MHz]
Low Range	5	23205	779.5	5205	748.5
Mid Range	5/10	23230	782	5230	751
High Range	5	23255	784.5	5255	753.5

3.4. EUT operation mode

For RF test items
The EUT has been tested under typical operating condition. Testing was performed by configuring EUT to maimum output power status.

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Radiated Spurious Emission	2	v	v	v	v	v	v	v		v			v	v	v
	4	v	v	v	v	v	v	v		v			v	v	v
	13			v	v	-	-	v		v			v	v	v
Remark	1. The mark “v“means that this configuration is chosenfor testing 2. The mark “-“means that this bandwidth is not supported. 3. The device is investigatedfrom 30MHz to10 times offundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.														

3.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- ● - supplied by the manufacturer
- ○ - supplied by the lab

		Manufacturer :	
		Model No. :	
		Manufacturer :	
		Model No. :	

3.6. Modifications

No modifications were implemented to meet testing criteria.

4. TEST ENVIRONMENT

4.1. Address of the test laboratory

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.
Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

4.2. Test Facility

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 762235

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files.

IC-Registration No.:5377B-1

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No.: 5377B-1.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

4.3. Equipments Used during the Test

RF Conducted						
No.	Equipment	Manufacturer	Model No.	SerialNo.	Last Cal. (mm/dd/yy)	Next Cal. (mm/dd/yy)
1	UNIVERSAL RADIO COMMUNICATION	Rohde&Schwarz	CMU200	112012	11/11/2017	11/11/2018
2	WIDEB.RADIO COMM.TESRER	Rohde&Schwarz	CMW500	137688	10/26/2017	10/25/2018
3	Spectrum Analyzer	Rohde&Schwarz	FSW26	103440	11/11/2017	11/10/2018
4	MXA Signal Analyzer	Agilent Technologies	N9020A	MY5050187	11/10/2017	11/09/2018
5	Splitter	Mini-Circuit	ZAPD-4	400059	03/20/2017	03/19/2018
6	Climate Chamber	ESPEC	EL-10KA	05107008	11/10/2017	11/09/2018

RF Radiated						
No.	Equipment	Manufacturer	Model No.	SerialNo.	Last Cal. (mm/dd/yy)	Next Cal. (mm/dd/yy)
1	UNIVERSAL RADIO COMMUNICATION	Rohde&Schwarz	CMU200	112012	11/11/2017	11/11/2018
2	WIDEB.RADIO COMM.TESRER	Rohde&Schwarz	CMW500	137688	10/26/2017	10/25/2018
3	Spectrum Analyzer	Rohde&Schwarz	FSW26	103440	11/11/2017	11/10/2018
4	HORNANTENNA	ShwarzBeck	9120D	1011	03/27/2017	03/26/2020
5	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	04/05/2017	04/04/2020
6	TURNTABLE	MATURO	TT2.0	N/A	N/A	N/A
7	ANTENNA MAST	MATURO	TAM-4.0-P	N/A	N/A	N/A
8	EMI Test Software	Audix	E3	N/A	N/A	N/A
9	EMI Test Receiver	R&S	ESCI	101247	11/11/2017	11/10/2018
10	High pass filter	Compliance Direction systems	BSU-6	34202	11/11/2017	11/10/2018
11	Preamplifier	ShwarzBeck	BBV 9718	9718-248	10/18/2017	10/17/2018
12	Broadband Preamplifier	ShwarzBeck	BBV 9743	9743-0022	10/18/2017	10/17/2018
13	Signal Generator	Rohde&Schwarz	SMB100A	114360	06/13/2017	06/12/2018
14	Pre-amplifer	SCHWARZBECK	BBV 9742	N/A	11/22/2017	11/21/2018
15	Turntable	Maturo Germany	TT2.0-1T	N/A	N/A	N/A
16	Antenna Mast	Maturo Germany	CAM-4.0-P-12	N/A	N/A	N/A
17	Test Software	R&S	ES-K1	N/A	N/A	N/A
18	Loop Antenna	R&S	HFH2-Z2	100020	11/20/2017	11/19/2020
19	RF Connection Cable	HUBER+SUHNER	N/A	N/A	11/21/2017	11/20/2018
20	RF Connection Cable	HUBER+SUHNER	SUCOFLEX104	501184/4	11/21/2017	11/20/2018
21	RF Connection Cable	HUBER+SUHNER	MULTIFLEX 141	N/A	11/21/2017	11/20/2018
22	Spectrum Analyzer	R&S	FSP40	100597	11/11/2017	11/10/2018
23	RF Connection Cable	HUBER+SUHNER	3m 18GHz S Serisa	N/A	11/21/2017	11/20/2018
24	RF Connection Cable	HUBER+SUHNER	3m 3GHz S Serisa	N/A	11/21/2017	11/20/2018
25	RF Connection Cable	HUBER+SUHNER	3m 3GHz RG Serisa	N/A	11/21/2017	11/20/2018
26	RF Connection Cable	HUBER+SUHNER	6m 18GHz S Serisa	N/A	11/21/2017	11/20/2018

4.4. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Conditon	Temperature	15 °C to +35 °C
	Relative humidity	20 % to 75 %.
	Voltage	the equipment shall be the nominal voltage for which the equipment was designed.
Extreme Conditon	Temperature	From −30° to + 50° centigrade
	Voltage	For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer

4.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01"Electromagnetic compatibilityand Radio spectrum Matters (ERM);Uncertainties in the measurementof mobile radio equipment characteristics;Part 1"and TR-100028-02 "Electromagnetic compatibilityand Radio spectrum Matters (ERM);Uncertainties in the measurementof mobile radio equipment characteristics;Part 2 " and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongweilaboratory is reported:

Test Items	MeasurementUncertainty	Notes
Frequency stability	25 Hz	(1)
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-12.75 GHz	1.60 dB	(1)
Conducted Emission 9KHz-30MHz	3.39 dB	(1)
Radiated Emission 30~1000MHz	4.24 dB	(1)
Radiated Emissio 1~18GHz	5.16 dB	(1)
Radiated Emissio 18-40GHz	5.54 dB	(1)
Occupied Bandwidth	---------	(1)
Emission Mask	---------	(1)
Modulation Characteristic	---------	(1)
Transmitter Frequency Behavior	---------	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

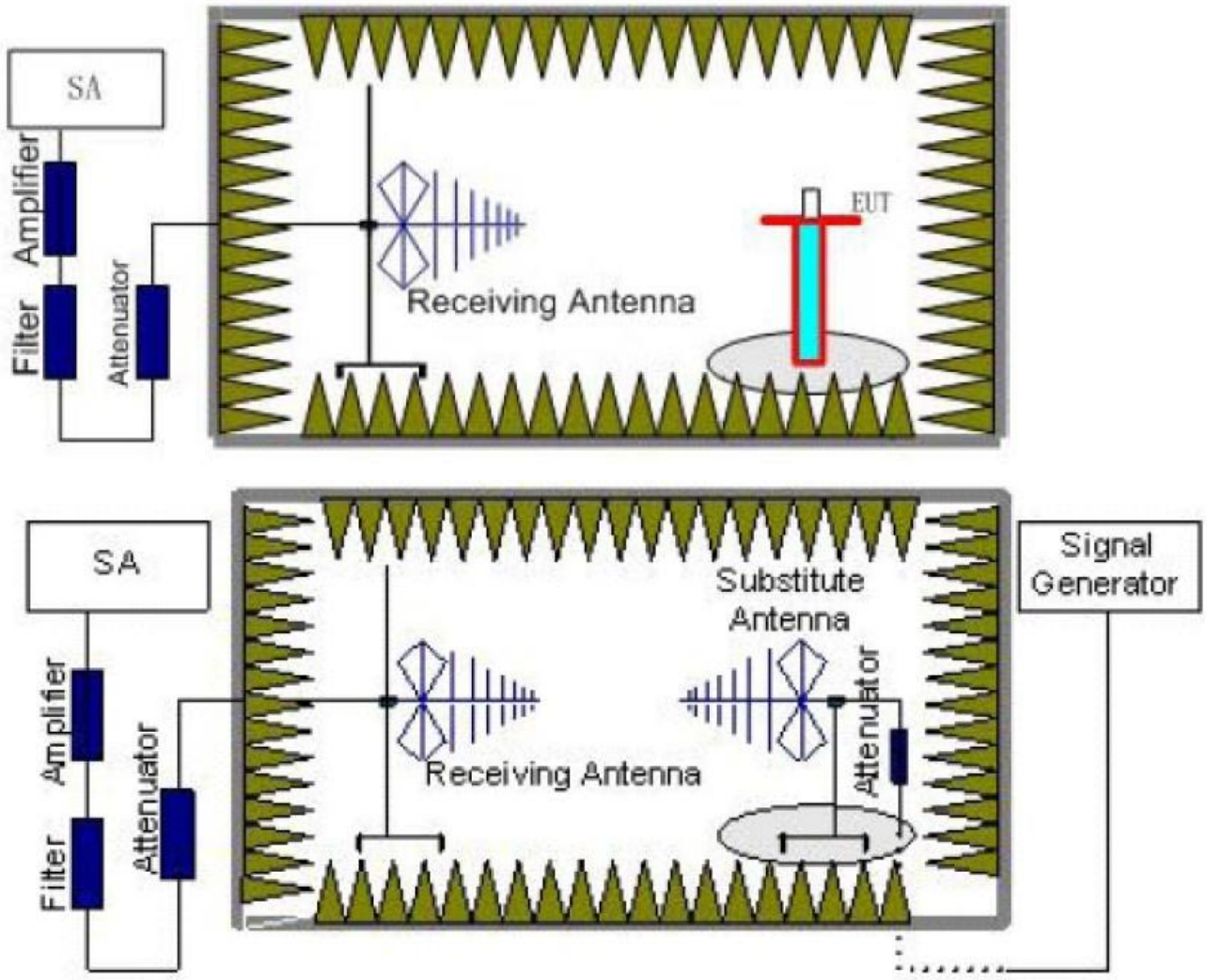
5. TEST CONDITIONS AND RESULTS

5.1. Radiated Spurious Emssion

LIMIT

LTE Band 2/4/13:<-13dBm

TEST CONFIGURATION



TEST RESULTS

1. EUT was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna shall be moved from 1m to 4m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz for above 1GHz and RBW=100kHz,VBW=300kHz for 30MHz to 1GHz, And the maximum value of the receiver should be recorded as (Pr).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the

frequency band of interest isconnected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
6. The measurement results are obtained as described below:
   Power(EIRP)=PMea- PAg - Pcl + Ga
   We used SMF100A micowave signal generator which signal level can up to 33dBm,so we not used power Amplifier for substituation test; The measurement results are amend as described below:
   Power(EIRP)=PMea- Pcl + Ga
7. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
   ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

TEST MODE:

Please refer to the clause 3.3

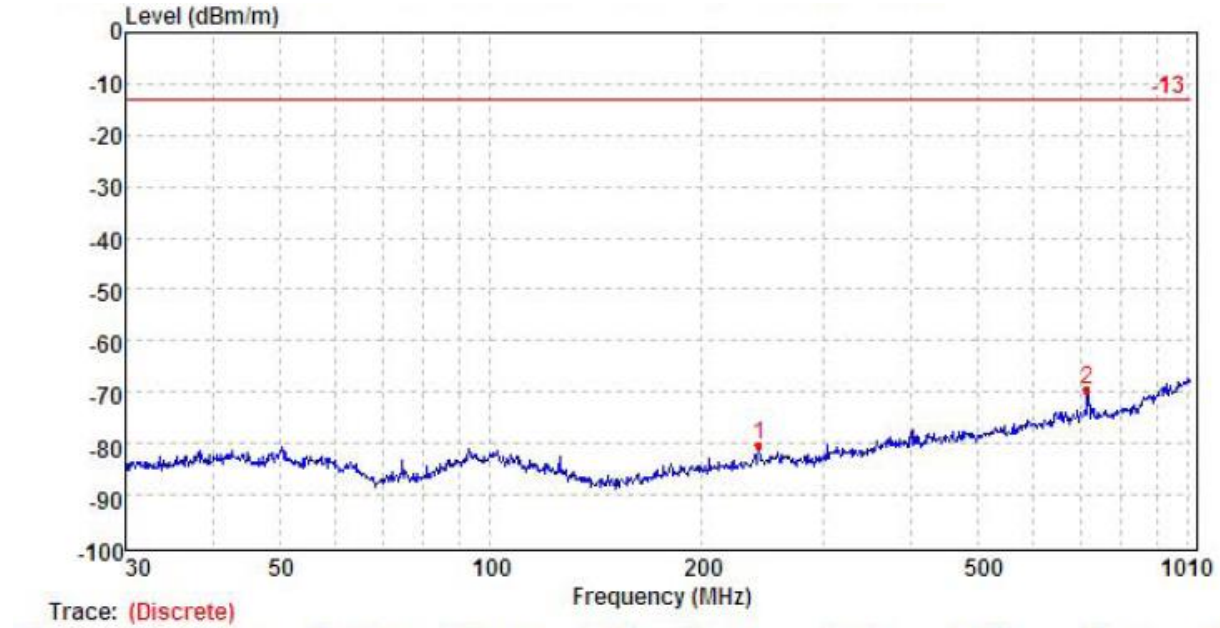
TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Note: Worst case at LTE Band 2/4/13.

30MHz~1GHz
LTE Band 2(1.4MHz Bandwidth):

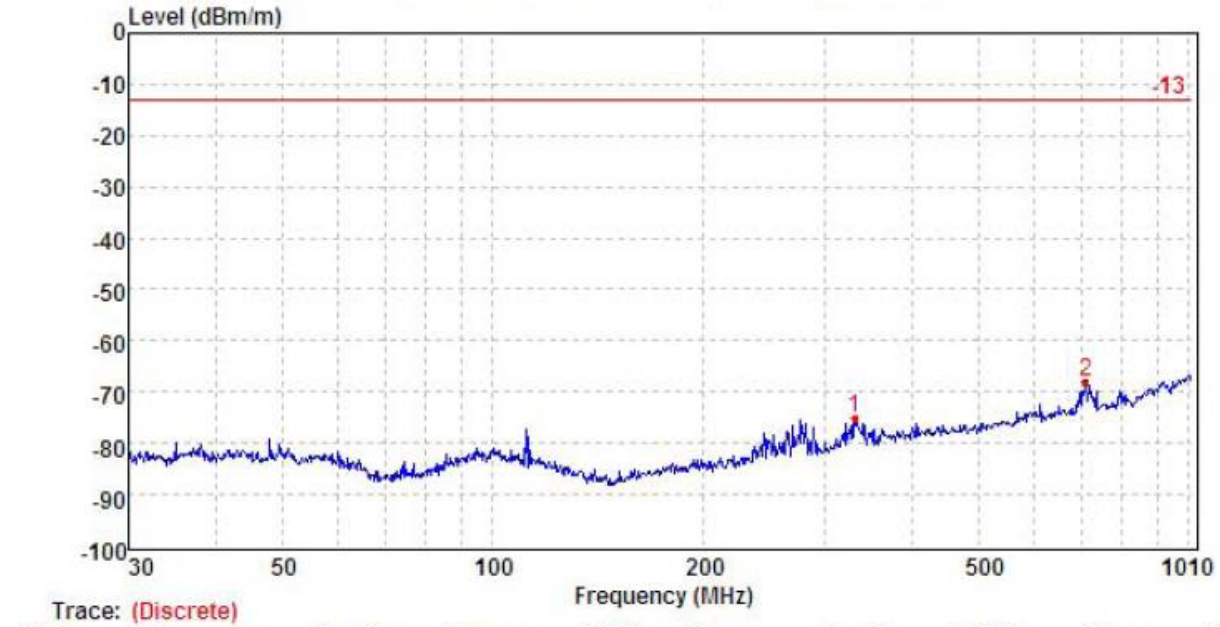
Polarization:	Vertical



Trace: (Discrete)

Mark	Frequency MHZ	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	242.26	-77.79	24.79	1.78	29.17	-80.39	-13.00	-67.39	Peak
2	715.58	-76.27	32.26	3.20	28.59	-69.40	-13.00	-56.40	Peak

Polarization:	Horizontal

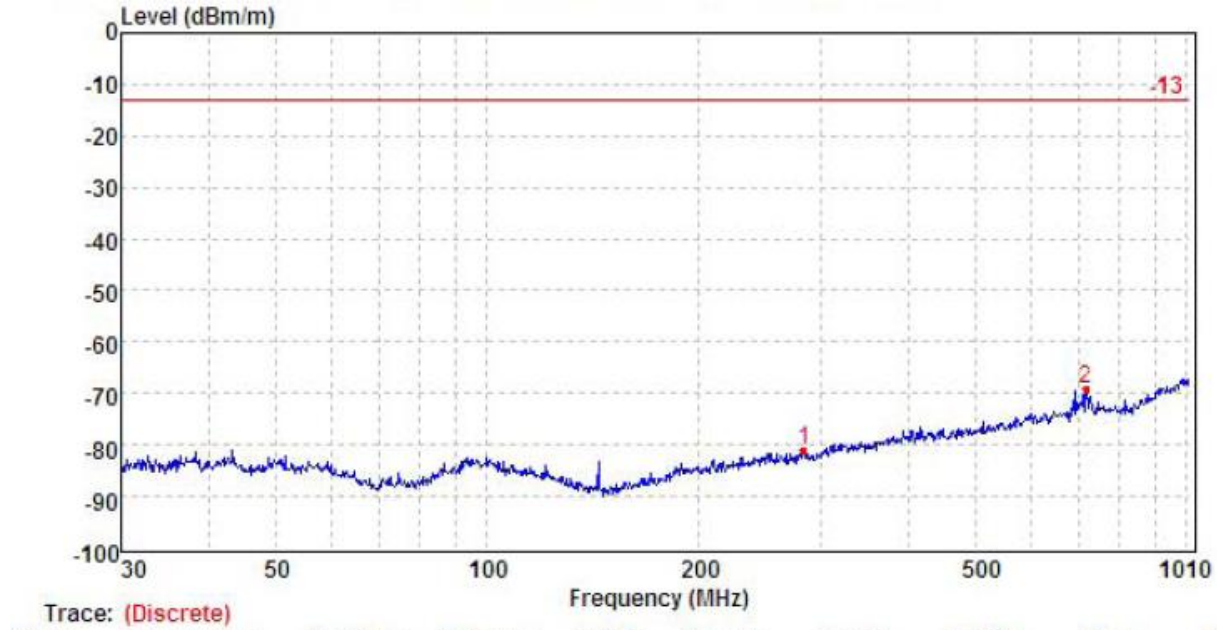


Trace: (Discrete)

Mark	Frequency MHZ	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	331.28	-75.20	26.99	2.09	29.08	-75.20	-13.00	-62.20	Peak
2	710.56	-74.84	32.20	3.19	28.58	-68.03	-13.00	-55.03	Peak

LTE Band 4(1.4MHz Bandwidth):

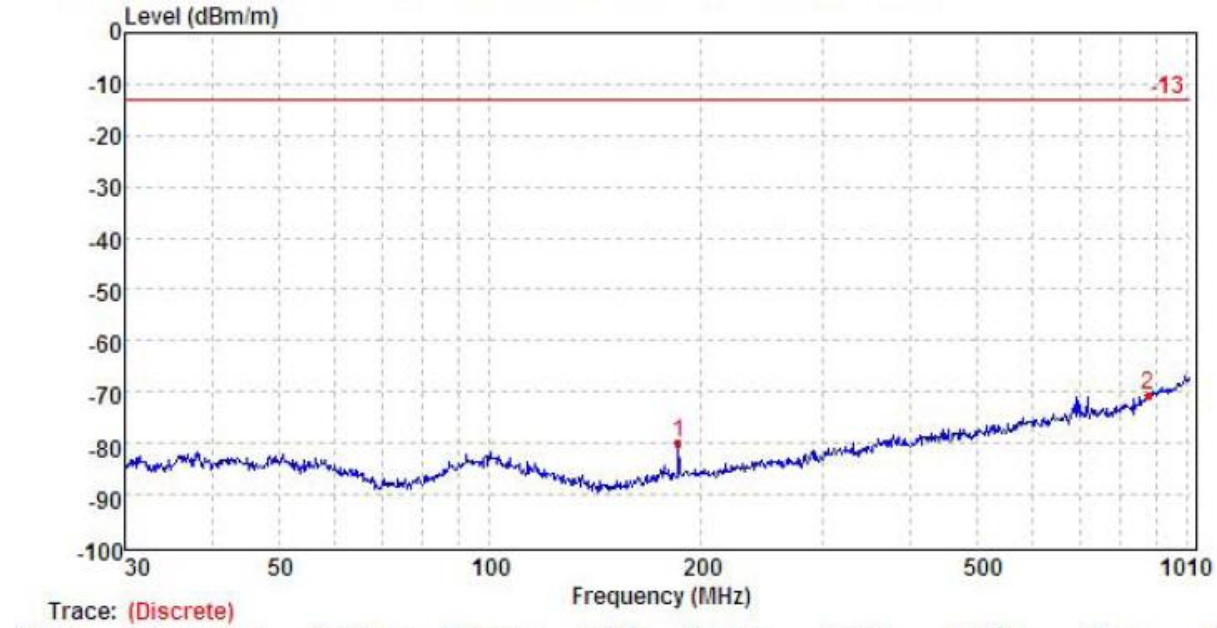
Polarization:	Vertical



Trace: (Discrete)

Mark	Frequency MHZ	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	283.79	-79.61	25.79	1.95	29.13	-81.00	-13.00	-68.00	Peak
2	718.10	-75.97	32.26	3.20	28.60	-69.11	-13.00	-56.11	Peak

Polarization:	Horizontal

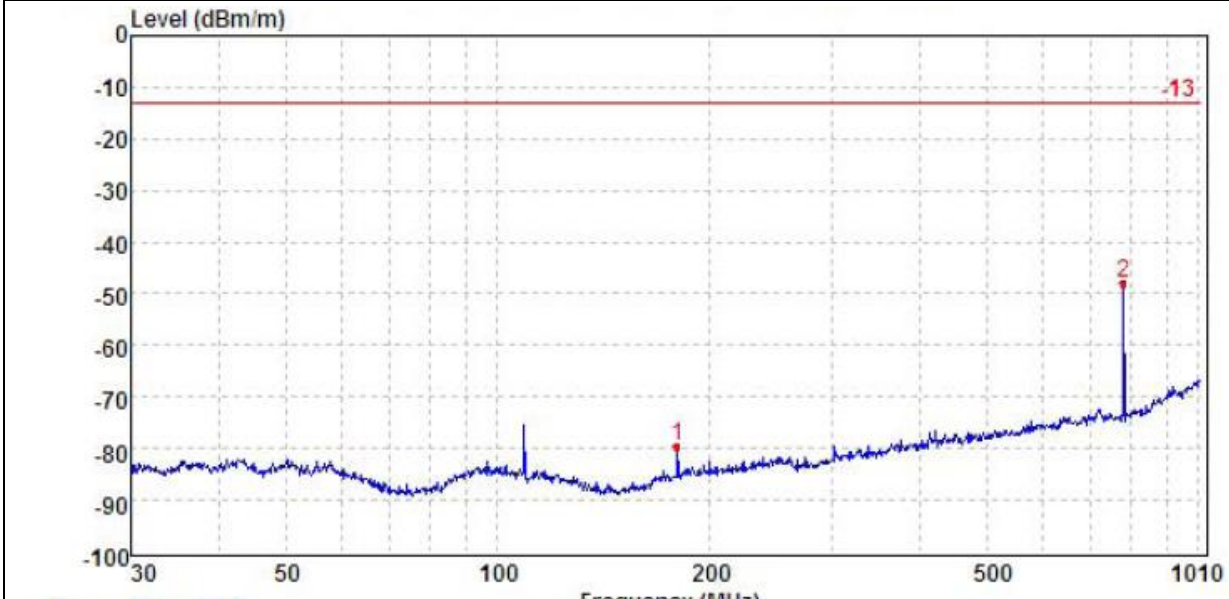


Trace: (Discrete)

Mark	Frequency MHZ	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	186.10	-75.27	23.01	1.56	29.08	-79.78	-13.00	-66.78	Peak
2	877.47	-81.02	34.86	3.68	28.23	-70.71	-13.00	-57.71	Peak

LTE Band 13(5MHz Bandwidth):

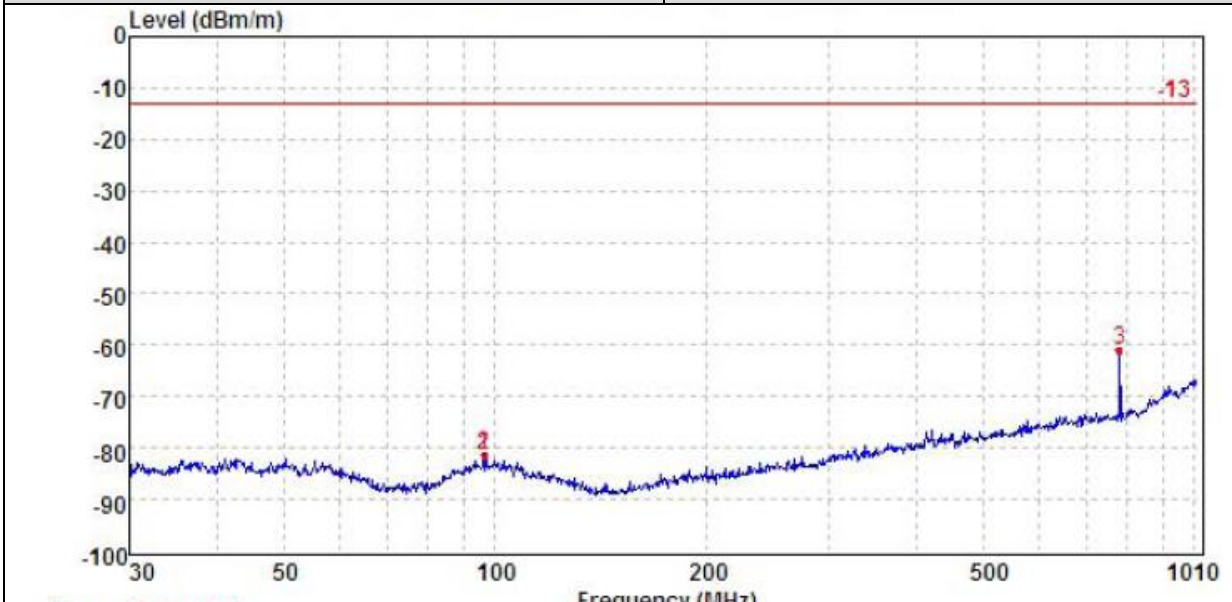
Polarization:	Vertical



Trace: (Discrete)

Mark	Frequency MHZ	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	180.30	-74.88	22.74	1.53	29.11	-79.72	-13.00	-66.72	Peak
2	781.33	-55.53	33.03	3.42	28.88	-47.96	-13.00	-34.96	Peak

Polarization:	Horizontal



Trace: (Discrete)

Mark	Frequency MHZ	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
2	96.42	-79.26	25.61	1.13	29.08	-81.60	-13.00	-68.60	Peak
3	781.33	-68.53	33.03	3.42	28.88	-60.96	-13.00	-47.96	Peak

6. External and Internal Photos of the EUT

Reference to Test Report No.: TRE1801017101.

.....End of Report.....