FCC RADIO TEST REPORT
FCC ID:2AAU7-ZTZWUSZBEE

Product：	ZipaTile
Trade Name：	Zipato
Model Name：	zt.zwuszbee
Serial Model：	zt.zwuszbee.wht, zt.zwiszbee.wht, zt.zwiszbee, zt.zwauzbee.wht, zt.zwauzbee
Report No.：	NTEK- 2016NT05045507F4

Prepared for

TRI PLUS GRUPA D.O.O.

BANJAVCICEVA 11, 10000 ZAGREB, CROATIA

Prepared by

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TEST RESULT CERTIFICATION

Applicant's name	:	Tri plus grupa d.o.o.
Address	:	Banjavciceva 11, 10000 Zagreb, Croatia
Manufacture's Name	:	Tri plus grupa d.o.o.
Address	:	Banjavciceva 11, 10000 Zagreb, Croatia

Product description

Product name	:	ZipaTile
Model and/or type reference	:	zt.zwuszbee
Serial Model：		zt.zwuszbee.wht, zt.zwiszbee.wht, zt.zwiszbee, zt.zwauzbee.wht, zt.zwauzbee
Rating(s)	:	DC 3.7V
Standards	:	FCC Part15.249 01 Oct. 2015
Test procedure		ANSI C63.10-2013

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test	:	
Date (s) of performance of tests	:	04 May. 2016 ~28 May. 2016
Date of Issue	:	28 May. 2016
Test Result	:	**Pass**

Testing Engineer : Eileen Liu.

(Eileen Liu)

Technical Manager : Jason chen

(Jason Chen)

Authorized Signatory : Sam . chen

(Sam Chen)

Table of Contents Page

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C (15.249)			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	Pass	
15.203	Antenna Requirement	Pass	
15.249	Radiated Spurious Emission	Pass	
15.205	Band Edge Emission	Pass	
15.249	Occupied Bandwidth	Pass	

1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd
Add. : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.
FCC FRN Registration No.:238937; IC Registration No.:9270A-1
CNAS Registration No.:L5516

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	ZipaTile
Trade Name	Zipato
Model Name	zt.zwuszbee
Serial Model	zt.zwuszbee.wht, zt.zwiszbee.wht, zt.zwiszbee, zt.zwauzbee.wht, zt.zwauzbee
Model Difference	All the model are the same circuit and RF module, except the model No. and colour.
Product Description	The EUT is a ZipaTile Operation Frequency: 908.4 MHz 916MHz Modulation Type: GFSK Antenna Designation: PCB Antenna Antenna Gain(Peak) 1.0 dBi Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Channel List	Please refer to the Note 2.
Adapter	Model:KA23-0501500DES Input: 100-240V~, 50/60Hz, 0.35A Output: DC 5V⎓, 1500mA
Battery	DC 3.7V/1540mAh

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel	Frequency (MHz)
01	908.4
02	916

3.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	PCB Antenna	N/A	1.0	Antenna

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

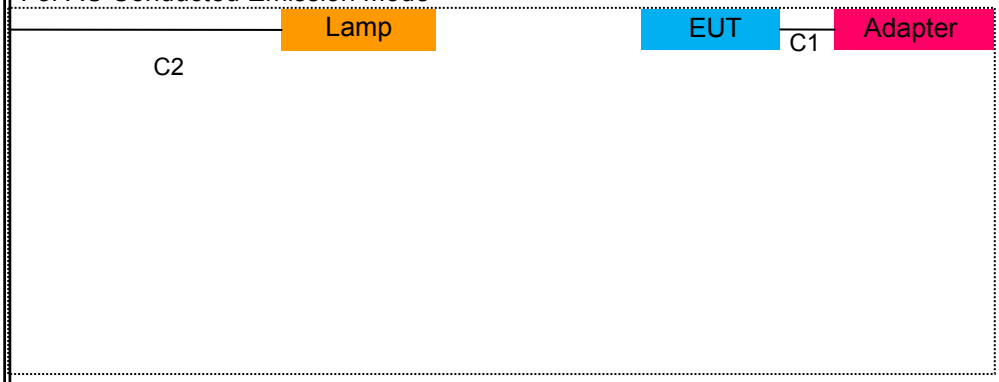
Pretest Mode	Description
Mode 1	CH 01
Mode 2	CH 02
Mode 3	Link Mode

Note:

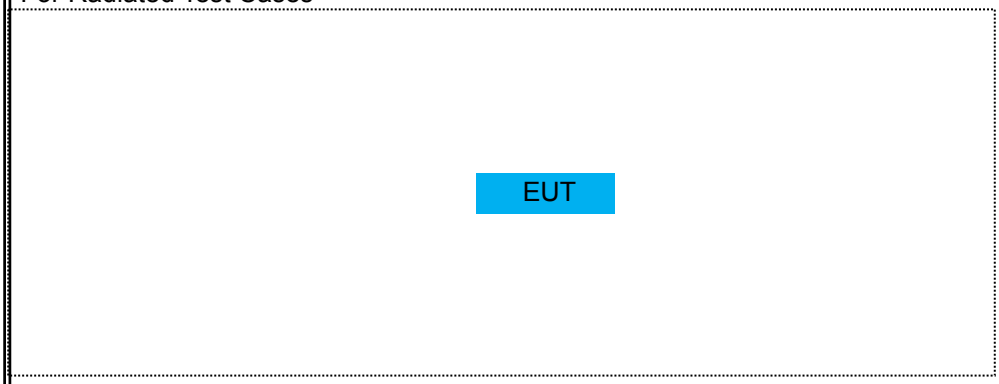
(1) The measurements are performed at the highest, lowest available channels.

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

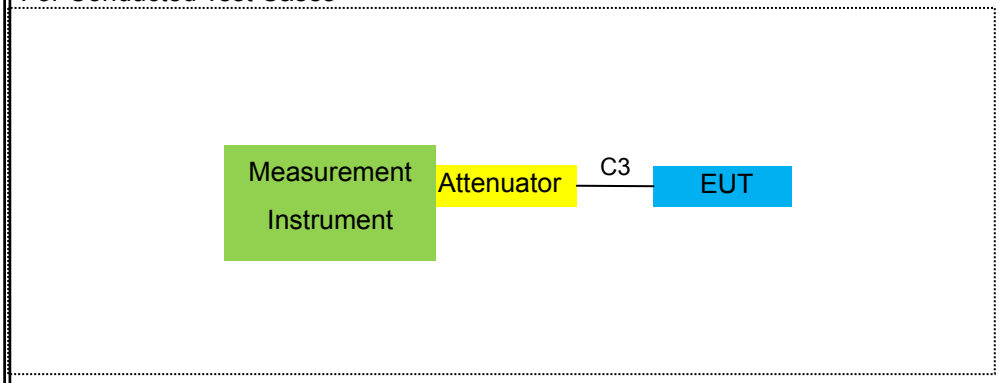
For AC Conducted Emission Mode



For Radiated Test Cases



For Conducted Test Cases



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	ZipaTile	Zipato	zt.zwuszbee	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2015.07.06	2016.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2015.06.07	2016.06.06	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2015.07.06	2016.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2015.06.07	2016.06.06	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2015.06.07	2016.06.06	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2015.07.06	2016.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2015.07.06	2016.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2015.12.22	2016.12.21	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2015.06.08	2016.06.07	1 year
10	Power Meter	R&S	NRVS	100696	2015.07.06	2016.07.05	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	2015.07.06	2016.07.05	1 year
12	Test Cable	N/A	R-01	N/A	2015.07.06	2016.07.05	1 year
13	Test Cable	N/A	R-02	N/A	2015.07.06	2016.07.05	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2015.06.06	2016.06.05	1 year
2	LISN	R&S	ENV216	101313	2015.08.24	2016.08.23	1 year
3	LISN	EMCO	3816/2	00042990	2015.08.24	2016.08.23	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2015.06.07	2016.06.06	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2015.06.07	2016.06.06	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2015.06.08	2016.06.07	1 year
7	Test Cable	N/A	C01	N/A	2015.06.08	2016.06.07	1 year
8	Test Cable	N/A	C02	N/A	2015.06.08	2016.06.07	1 year
9	Test Cable	N/A	C03	N/A	2015.06.08	2016.06.07	1 year

1	Attenuation	MCE	24-10-34	BN9258	2015.06.08	2016.06.07	1 year

Note: Each piece of equipment is scheduled for calibration once a year.

3. ANTENNA REQUIREMENT

3.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

3.2 EUT ANTENNA

The EUT antenna is permanent attached antenna. It comply with the standard requirement.

3.3 CONDUCTED EMISSION MEASUREMENT

3.3.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5			66 - 56 *	56 - 46 *	CISPR
0.50 -5.0			56.00	46.00	CISPR
5.0 -30.0			60.00	50.00	CISPR

0.15 -0.5			66 - 56 *	56 - 46 *	FCC
0.50 -5.0			56.00	46.00	FCC
5.0 -30.0			60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

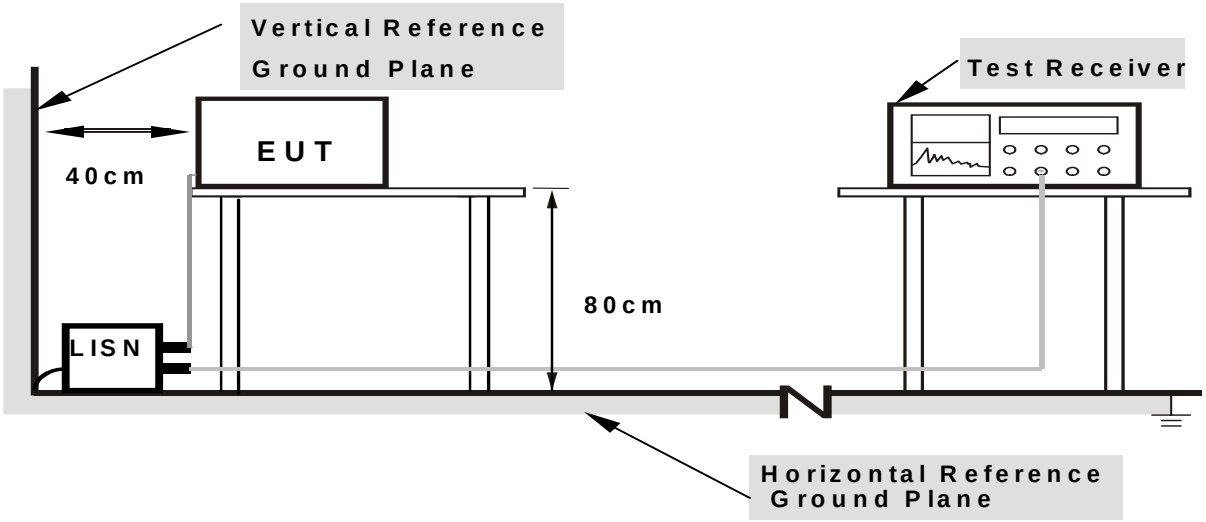
3.3.2 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

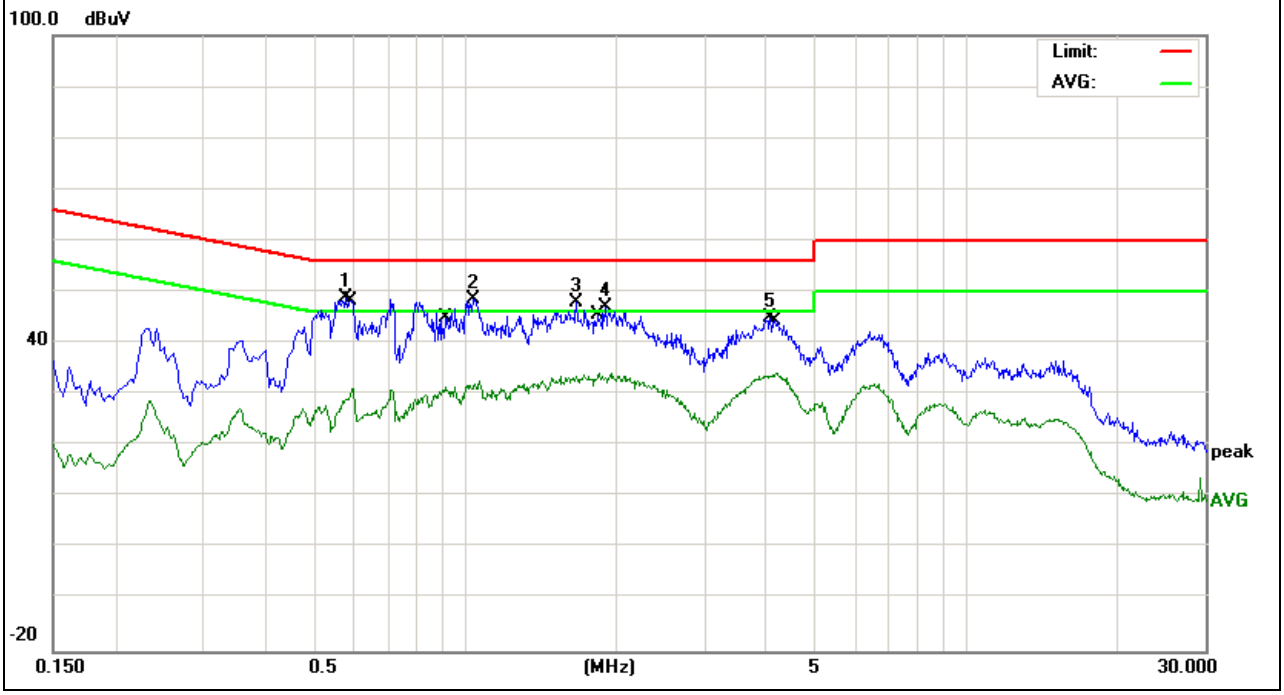
3.2.5 TEST RESULT

EUT：	ZipaTile	Model Name. ：	zt.zwuszbee
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 5V for Adapter AC 120V/60Hz	Test Mode：	Mode 3

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.5780	39.02	9.79	48.81	56.00	-7.19	peak
1.0339	38.69	9.85	48.54	56.00	-7.46	peak
1.6660	38.08	9.77	47.85	56.00	-8.15	peak
1.9060	37.41	9.74	47.15	56.00	-8.85	peak
4.0580	35.12	9.75	44.87	56.00	-11.13	peak
0.5940	21.36	9.79	31.15	46.00	-14.85	AVG
0.9100	21.50	9.83	31.33	46.00	-14.67	AVG
1.8500	24.35	9.75	34.10	46.00	-11.90	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

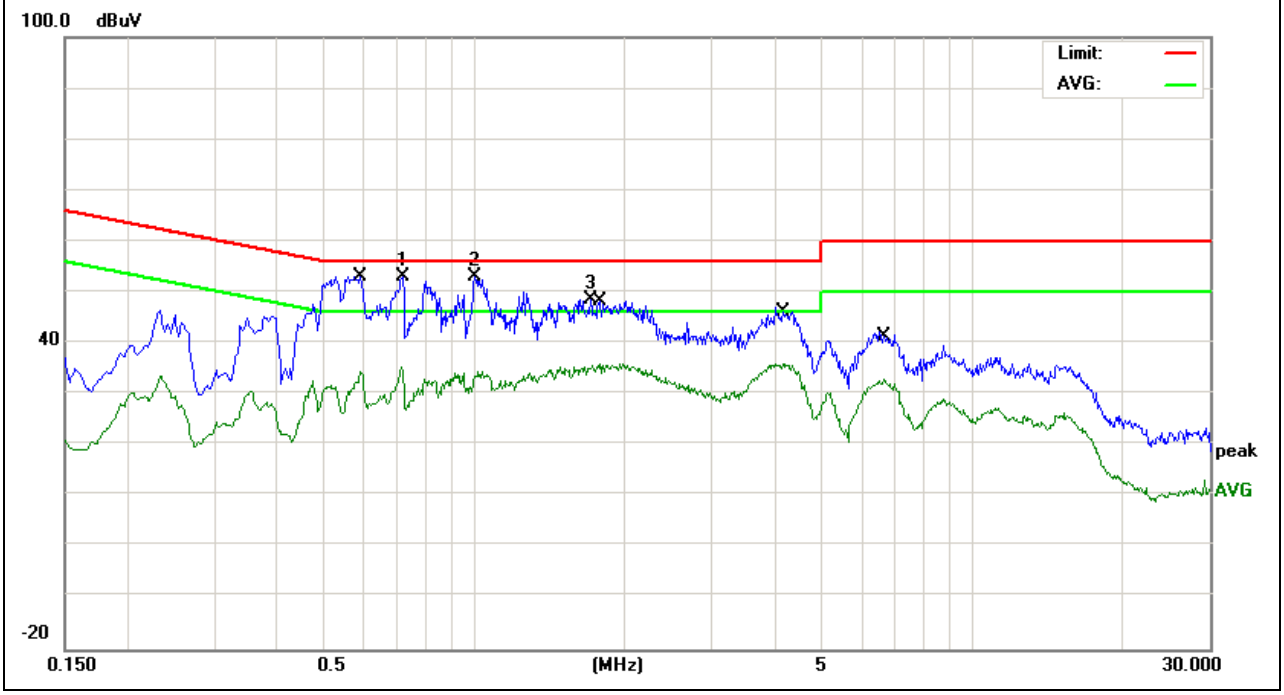


EUT：	ZipaTile	Model Name. ：	zt.zwuszbee
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5V for Adapter AC 120V/60Hz	Test Mode：	Mode 3

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.7180	43.41	9.78	53.19	56.00	-2.81	peak
1.0020	43.26	9.85	53.11	56.00	-2.89	peak
1.7140	38.71	9.76	48.47	56.00	-7.53	peak
0.5899	24.53	9.79	34.32	46.00	-11.68	AVG
1.7820	26.23	9.76	35.99	46.00	-10.01	AVG
4.1700	26.20	9.75	35.95	46.00	-10.05	AVG
6.6500	23.10	9.77	32.87	50.00	-17.13	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

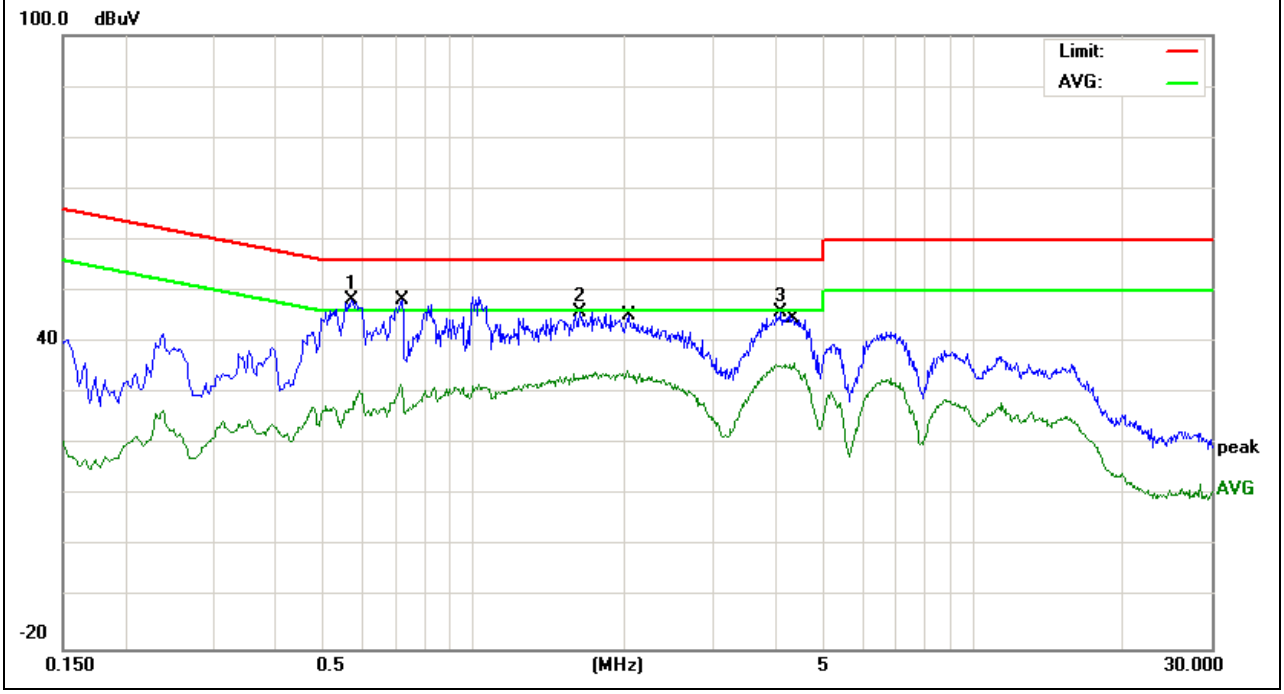


EUT：	ZipaTile	Model Name. ：	zt.zwuszbee
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 5V for Adapter AC 230V/50Hz	Test Mode：	Mode 3

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.5700	38.47	9.79	48.26	56.00	-7.74	peak
1.6340	36.16	9.77	45.93	56.00	-10.07	peak
4.1220	36.09	9.75	45.84	56.00	-10.16	peak
0.7140	22.02	9.78	31.80	46.00	-14.20	AVG
2.0260	24.75	9.73	34.48	46.00	-11.52	AVG
4.3820	26.21	9.75	35.96	46.00	-10.04	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

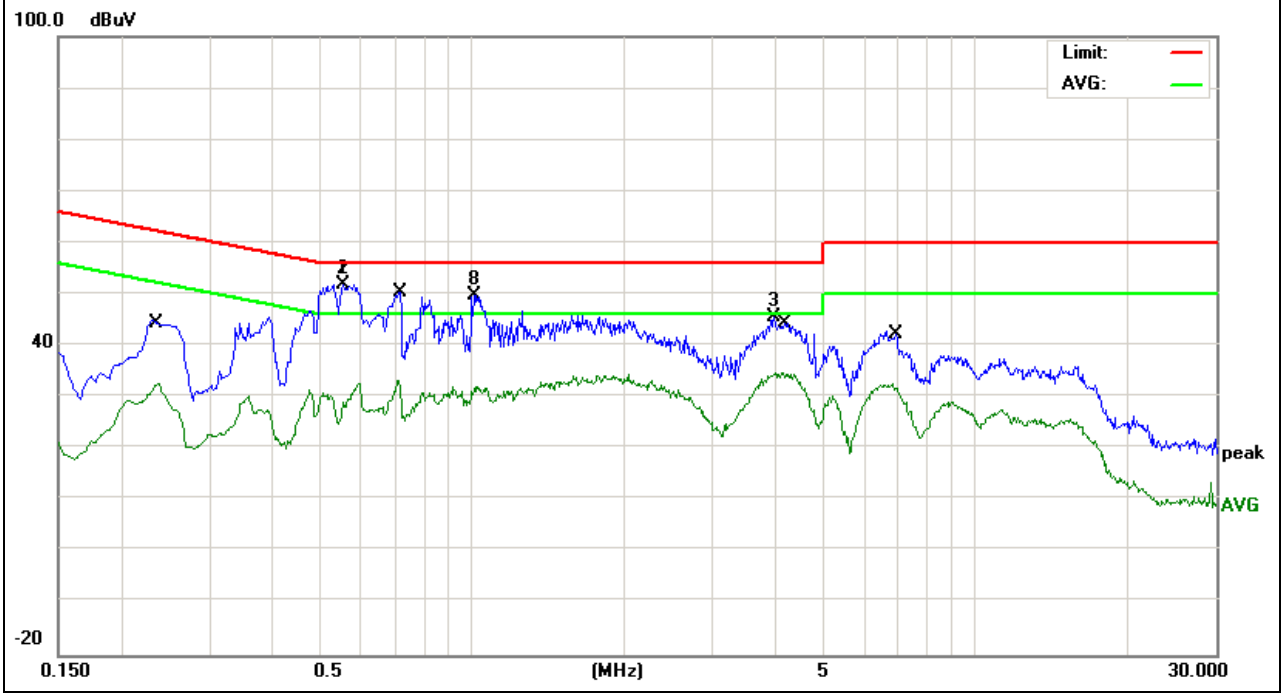


EUT：	ZipaTile	Model Name. ：	zt.zwuszbee
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5V for Adapter AC 230V/50Hz	Test Mode：	Mode 3

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.5540	42.20	9.79	51.99	56.00	-4.01	peak
0.5540	42.20	9.79	51.99	56.00	-4.01	peak
3.9740	35.79	9.75	45.54	56.00	-10.46	peak
0.2380	22.57	10.13	32.70	52.16	-19.46	AVG
0.7100	23.55	9.78	33.33	46.00	-12.67	AVG
4.1340	25.15	9.75	34.90	46.00	-11.10	AVG
6.8500	22.93	9.77	32.70	50.00	-17.30	AVG
1.0060	40.03	9.85	49.88	56.00	-6.12	peak

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



3.4 RADIATED EMISSION MEASUREMENT

3.4.1 Radiated Emission Limits (FCC 15.209)

Frequencies (MHz)	Field Strength (micorvolts/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
Frequency (MHz)	Limit (dBuV)	
30~88	40	3
88~216	43.5	3
216~960	46	3
960 -10000	54.00	3
*902 - 928	94.00	3

Note:

(1) The tighter limit applies at the band edges.

(2) Emission level (dBuV/m)=20log Emission level (uV/m).

(3) *Note: This is the limit for the fundamental frequency.

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.249)

Frequency of Emission (MHz)	Field Strength of fundamental ((millivolts /meter)	Field Strength of Harmonics (microvolts/meter)
902-928	50	500

Notes:

(1) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.4.2 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz and above 1GHz,
b. The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

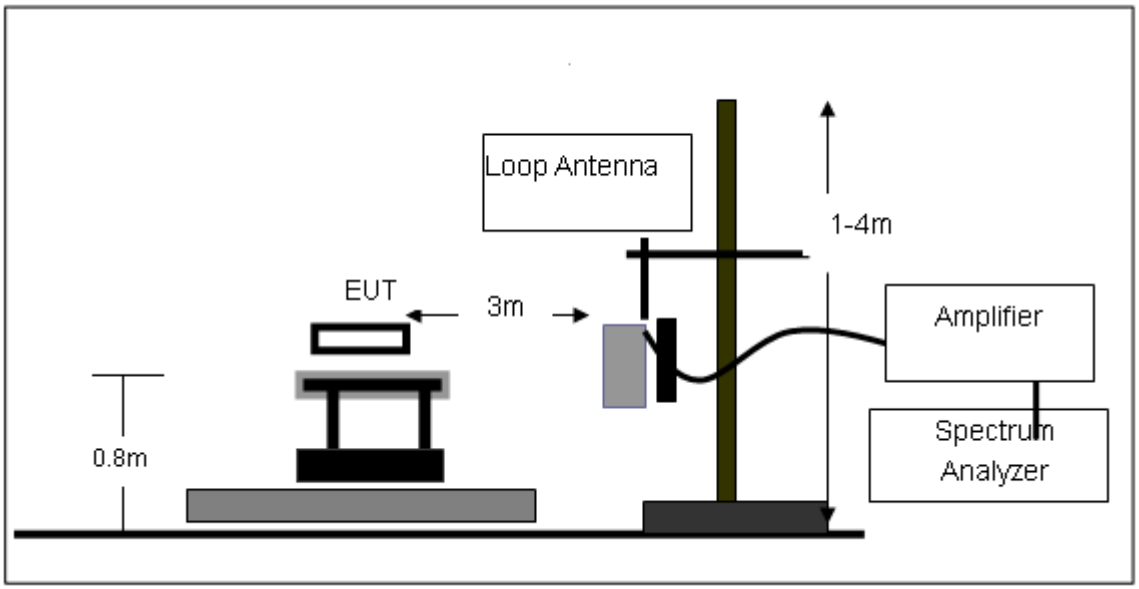
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.4.3 DEVIATION FROM TEST STANDARD

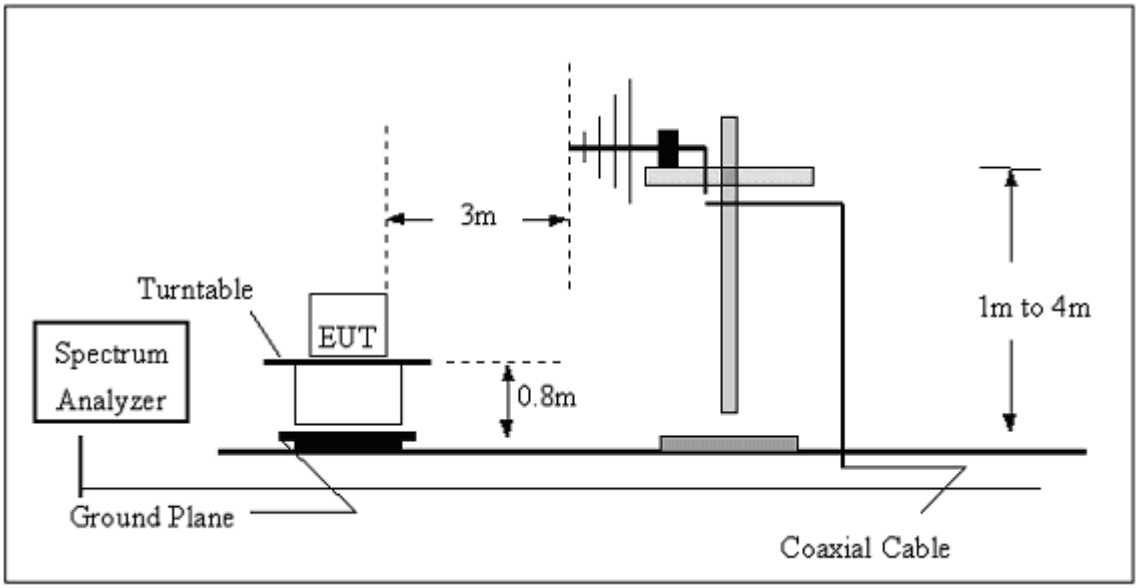
No deviation

3.4.4 TEST SETUP

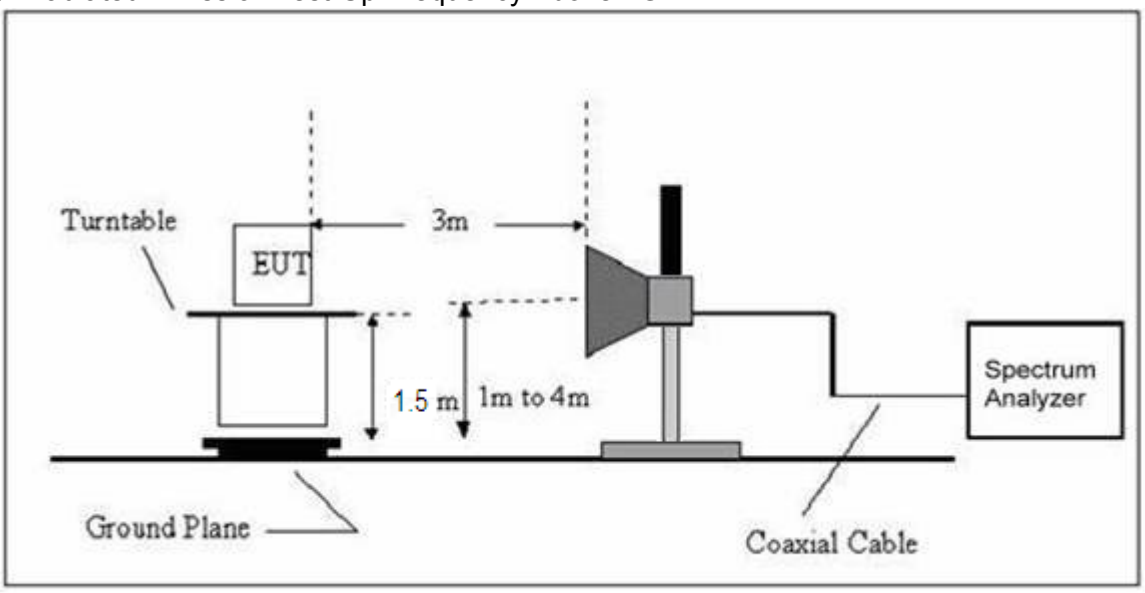
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.4.5 TEST RESULTS (BLOW 30MHz)

EUT：	ZipaTile	Model Name. ：	zt.zwuszbee
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	N/A
--	--	--	--	N/A

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =20 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

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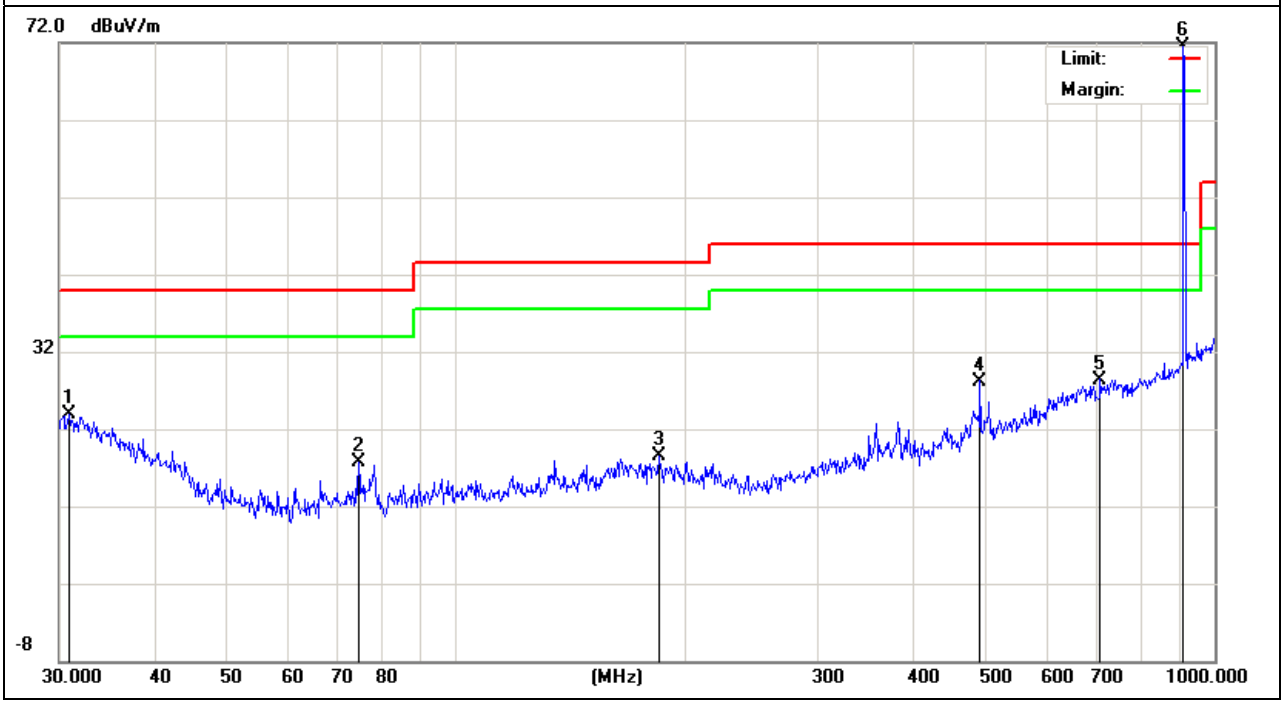
3.4.6 TEST RESULTS (BETWEEN 30 – 1000 MHZ)

EUT：	ZipaTile	Model Name ：	zt.zwuszbee
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V for Adapter AC 120V/60Hz
Test Mode ：	Mode 1	Polarization：	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
30.9618	4.76	19.22	23.98	40.00	-16.02	QP
74.3953	7.94	9.76	17.70	40.00	-22.30	QP
185.1379	6.70	11.80	18.50	43.50	-25.00	QP
490.7447	10.97	17.23	28.20	46.00	-17.80	QP
706.6997	7.28	21.12	28.40	46.00	-17.60	QP
908.4066	47.10	24.50	71.60	114.00	-42.40	QP
908.4066	39.19	24.50	63.69	94.00	-30.31	Avg

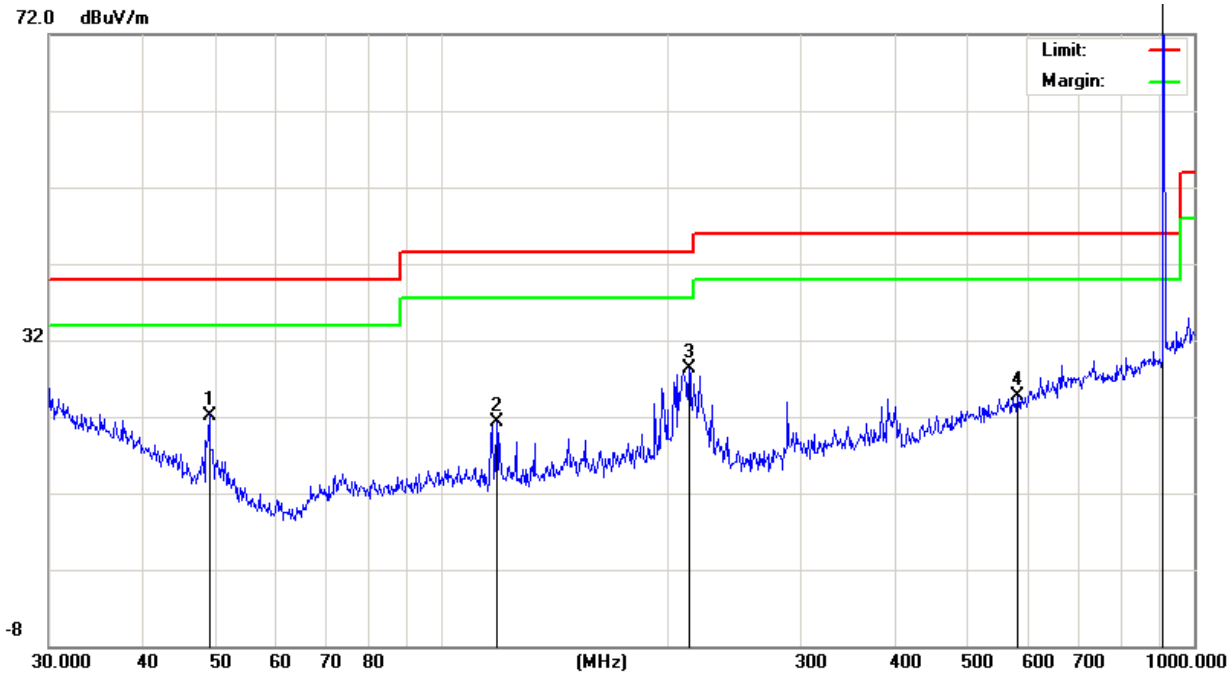
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	ZipaTile	Model Name ：	zt.zwuszbee
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V for Adapter AC 120V/60Hz
Test Mode ：	Mode 1	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
49.0144	12.47	9.73	22.20	40.00	-17.80	QP
118.1860	10.90	10.40	21.30	43.50	-22.20	QP
213.0149	17.27	11.03	28.30	43.50	-15.20	QP
582.7423	5.86	18.85	24.71	46.00	-21.29	QP
908.4066	70.40	24.50	94.90	114.00	-19.40	QP
908.4066	61.09	24.50	85.59	94.00	-8.41	Avg

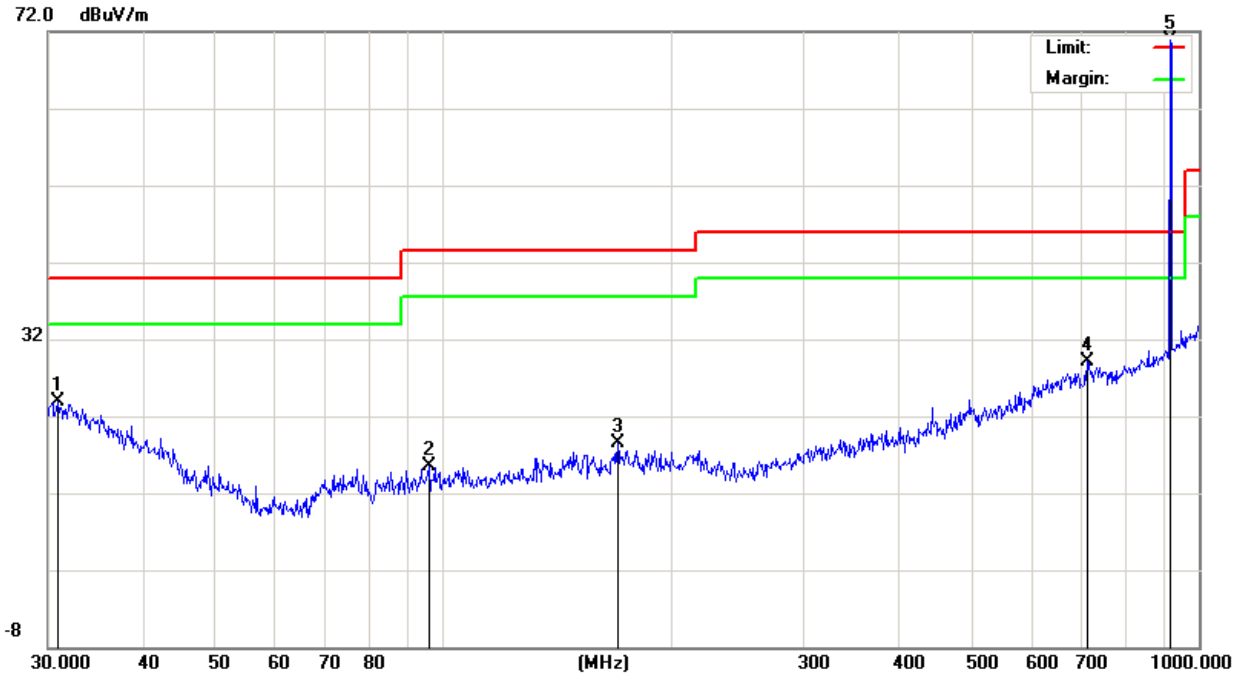
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	ZipaTile	Model Name ：	zt.zwuszbee
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V for Adapter AC 120V/60Hz
Test Mode ：	Mode 2	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
30.9618	4.76	19.22	23.98	40.00	-16.02	QP
95.7622	5.36	10.14	15.50	43.50	-28.00	QP
170.1947	6.04	12.54	18.58	43.50	-24.92	QP
711.6734	7.99	21.17	29.16	46.00	-16.84	QP
916.0687	46.11	24.71	70.82	114.00	-43.18	QP
916.0687	31.67	24.71	56.38	94.00	-37.62	Avg

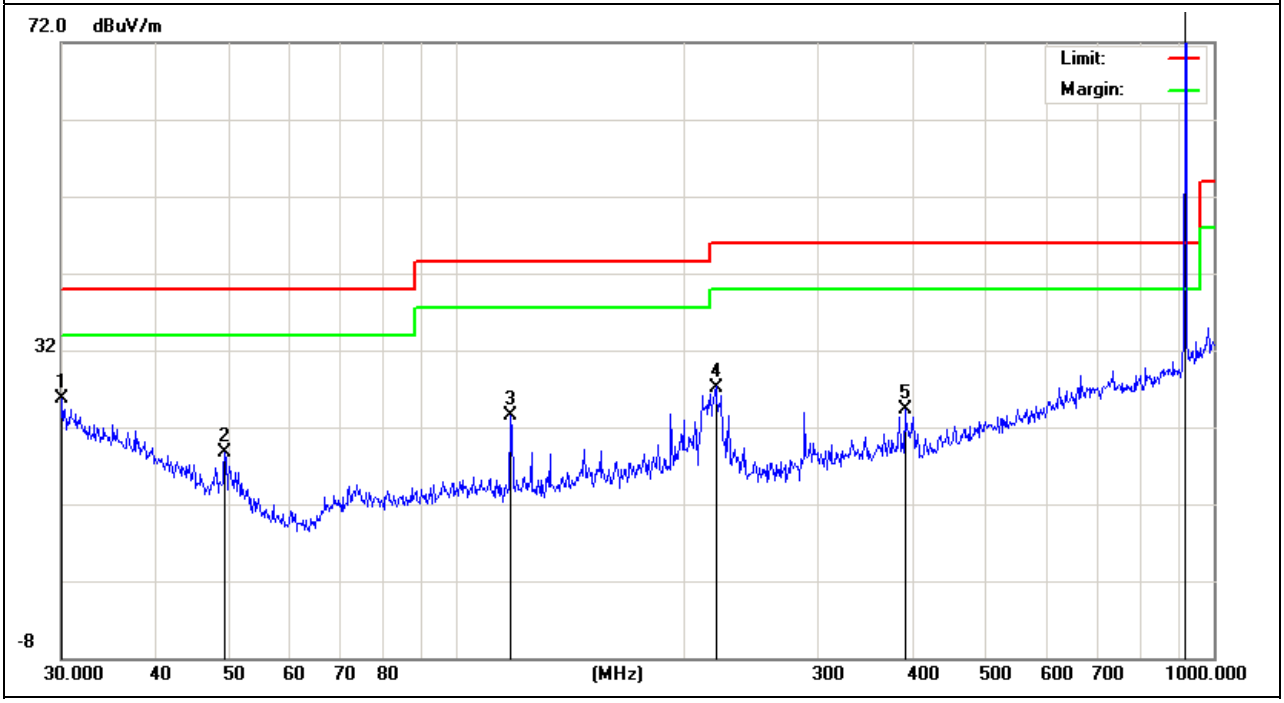
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	ZipaTile	Model Name ：	zt.zwuszbee
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V for Adapter AC 120V/60Hz
Test Mode ：	Mode 2	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
30.1053	6.21	19.53	25.74	40.00	-14.26	QP
49.3594	9.08	9.67	18.75	40.00	-21.25	QP
117.7724	13.15	10.37	23.52	43.50	-19.98	QP
219.8448	16.35	10.85	27.20	46.00	-18.80	QP
390.7225	9.64	14.76	24.40	46.00	-21.60	QP
916.0687	66.18	24.71	90.89	114.00	-23.11	QP
916.0687	48.39	24.71	73.10	94.00	-20.90	Avg

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

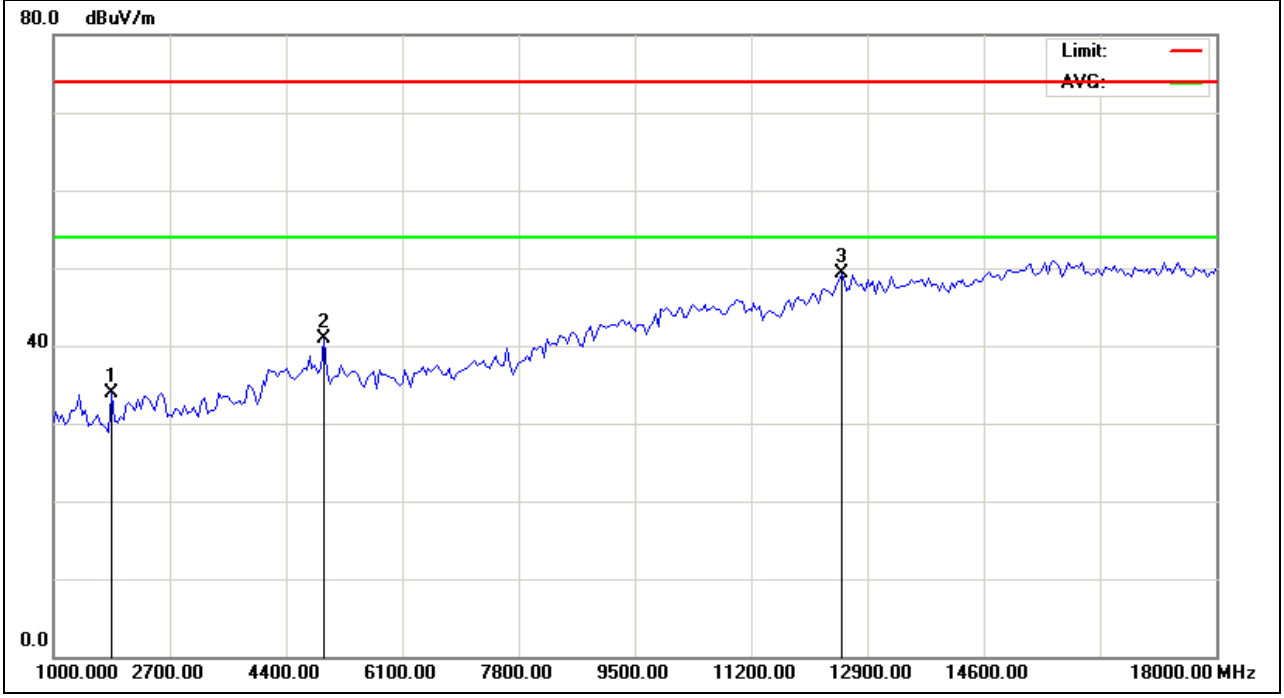


3.4.7 TEST RESULTS (ABOVE 1000 MHZ)

EUT：	ZipaTile	Model Name ：	zt.zwuszbee
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 1	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1850.000	44.72	-10.78	33.94	74.00	-40.06	peak
4952.500	40.45	0.41	40.86	74.00	-33.14	peak
12517.500	40.56	8.81	49.37	74.00	-24.63	peak

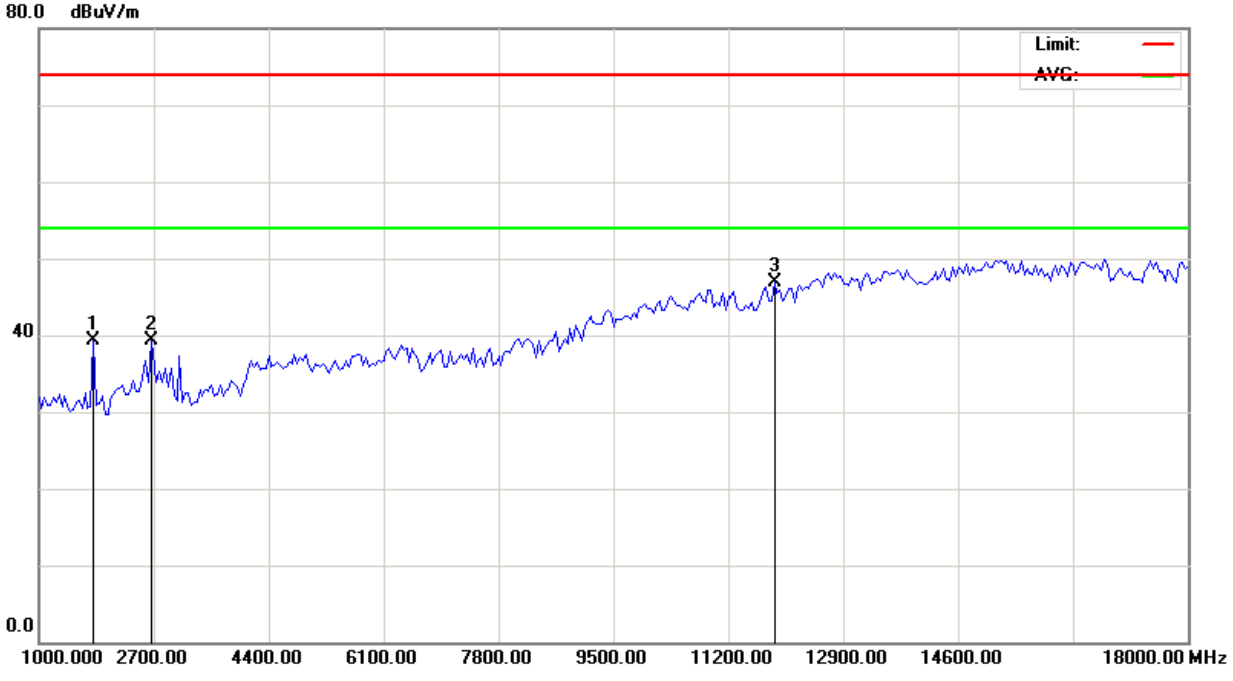
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	ZipaTile	Model Name ：	zt.zwuszbee
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 1	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1807.500	50.60	-11.30	39.30	74.00	-34.70	peak
2657.500	46.40	-7.00	39.40	74.00	-34.60	peak
11880.000	39.05	7.76	46.81	74.00	-27.19	peak

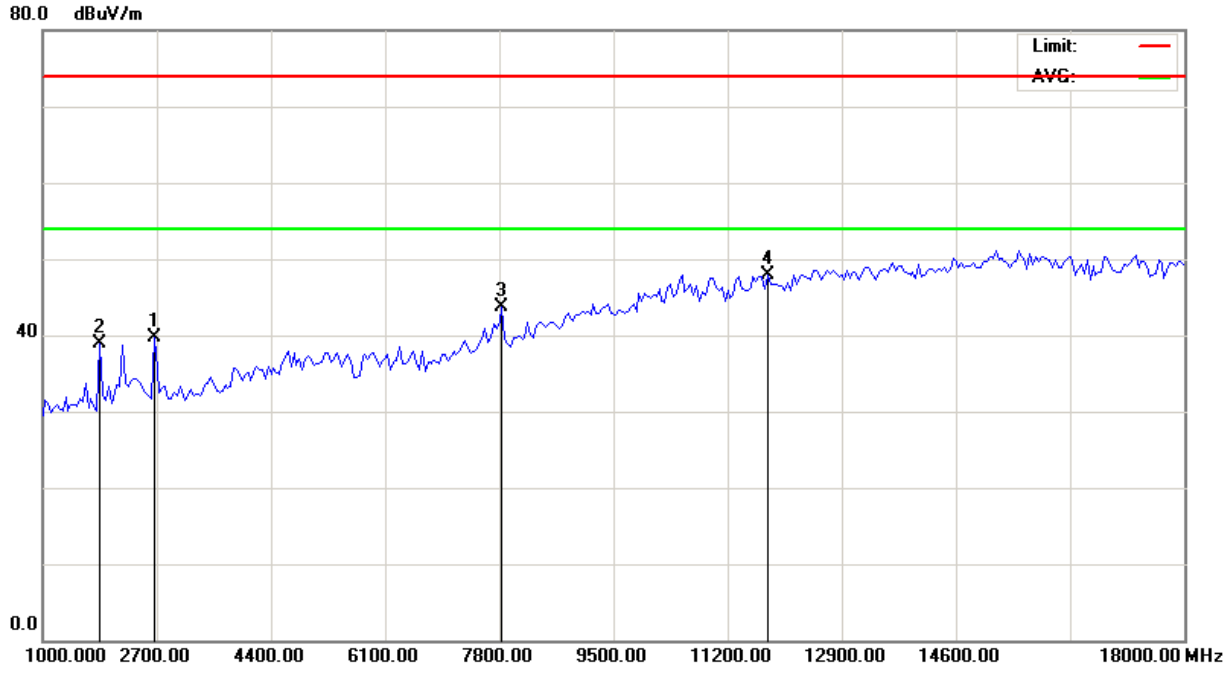
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	ZipaTile	Model Name ：	zt.zwuszbee
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 2	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2657.500	46.80	-7.00	39.80	74.00	-34.20	peak
1850.000	49.68	-10.78	38.90	74.00	-35.10	peak
7842.500	42.67	1.13	43.80	74.00	-30.20	peak
11795.000	40.47	7.53	48.00	74.00	-26.00	peak

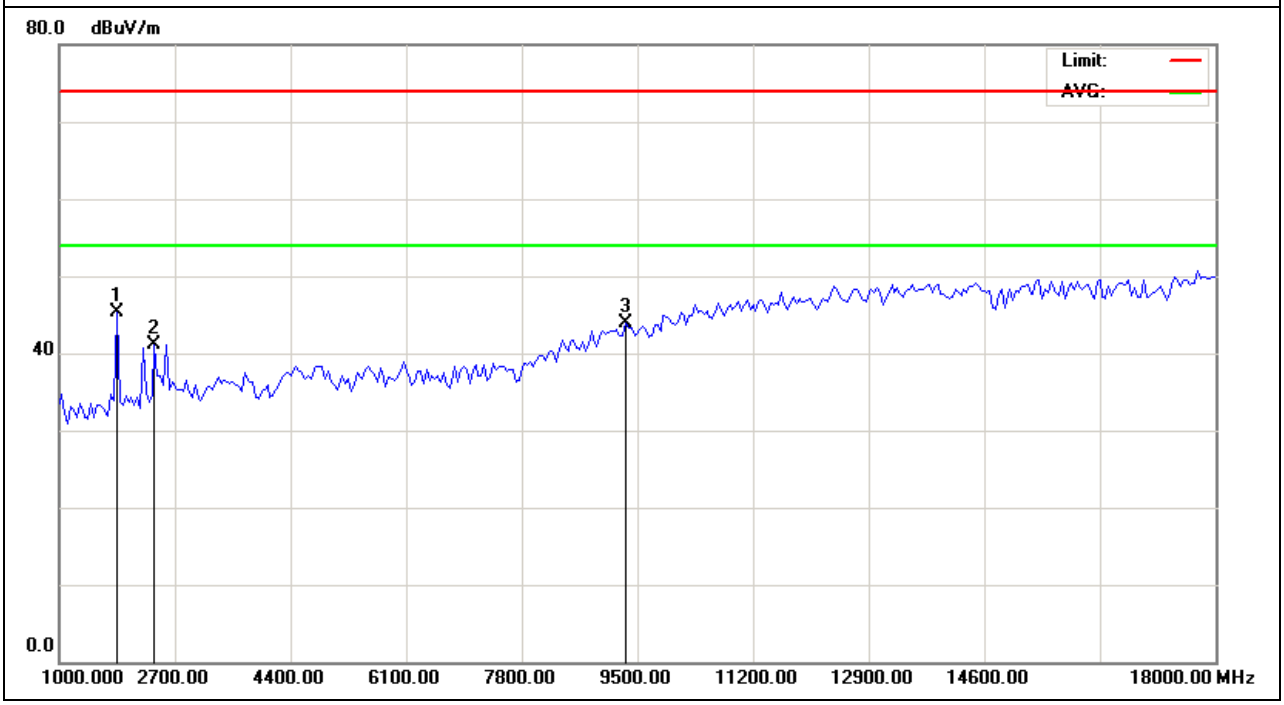
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	ZipaTile	Model Name ：	zt.zwuszbee
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 2	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1850.000	56.08	-10.78	45.30	74.00	-28.70	peak
2402.500	49.70	-8.50	41.20	74.00	-32.80	peak
9330.000	38.81	5.02	43.83	74.00	-30.17	peak

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



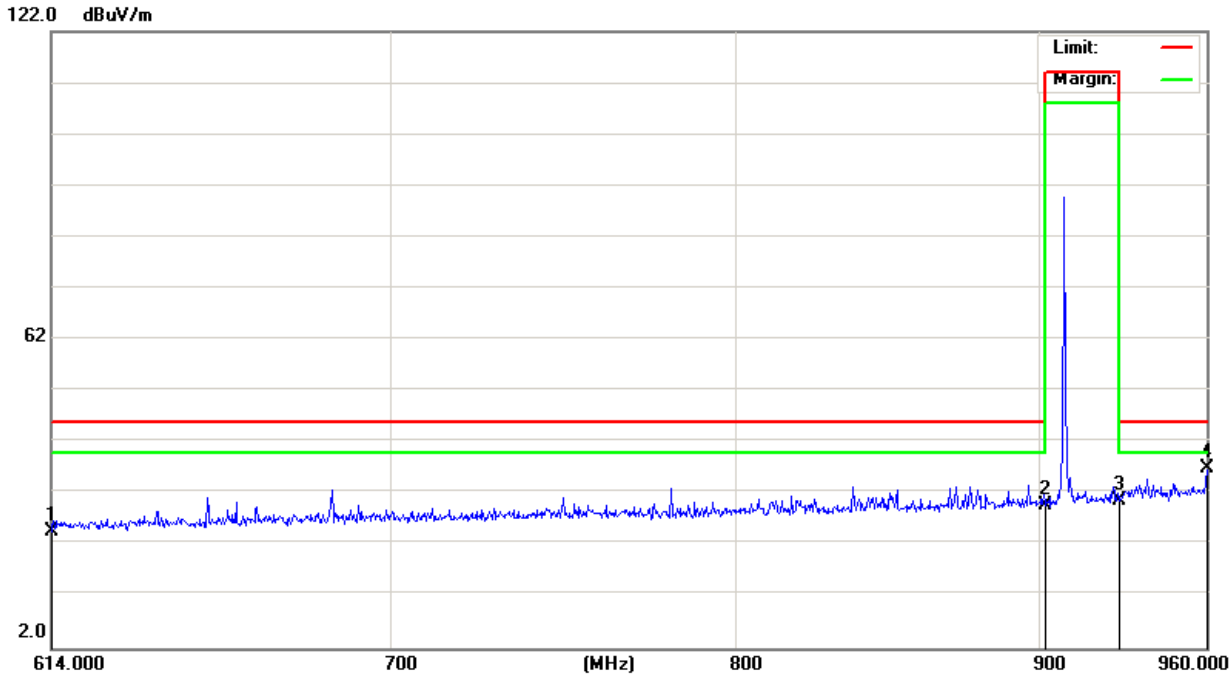
Note: EUT Pre-scan X/Y/Z orientation, only worst case is presented in the report(X orientation).

3.4.8 TEST RESULTS (RESTRICTED BANDS REQUIREMENTS)

EUT：	ZipaTile	Model Name ：	zt.zwuszbee
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 1	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
614.0000	4.97	19.82	24.79	46.00	-21.21	peak
902.0000	5.53	24.16	29.69	46.00	-16.31	peak
928.0000	5.41	25.29	30.70	46.00	-15.30	peak
960.0000	10.18	26.63	36.81	46.00	-9.19	peak

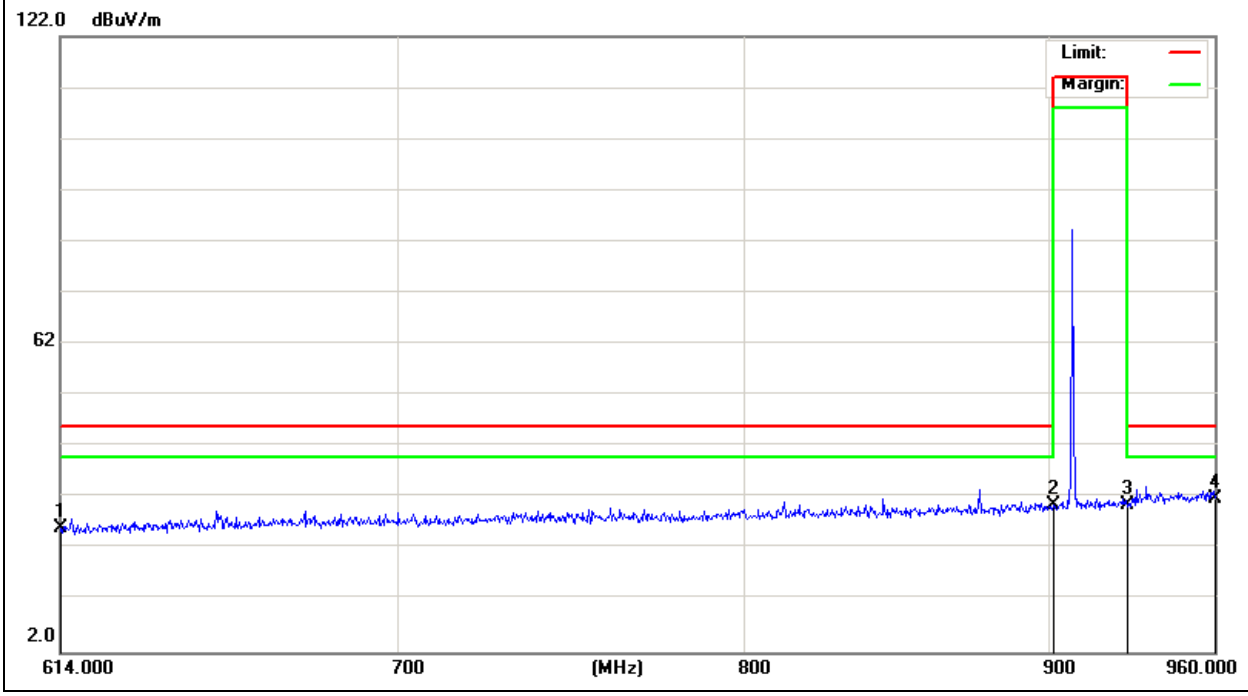
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	ZipaTile	Model Name ：	zt.zwuszbee
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 1	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
614.0000	6.37	19.82	26.19	46.00	-19.81	peak
902.0000	6.55	24.16	30.71	46.00	-15.29	peak
928.0000	5.46	25.29	30.75	46.00	-15.25	peak
960.0000	5.34	26.63	31.97	46.00	-14.03	peak

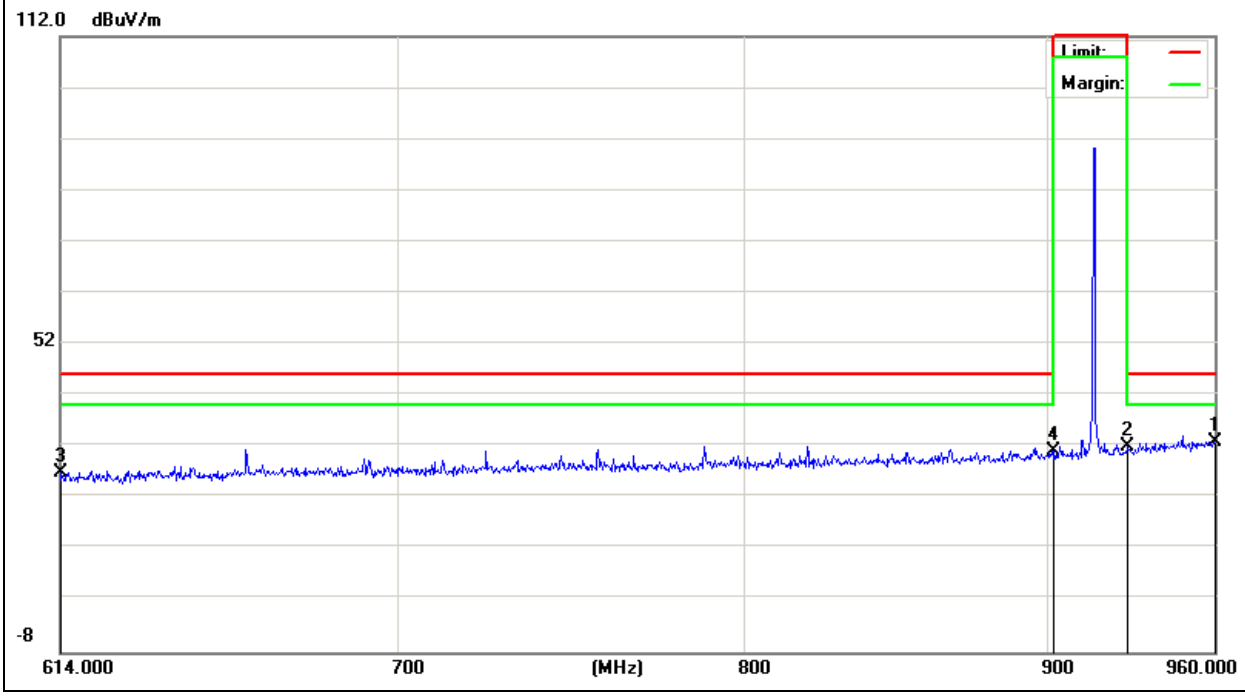
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	ZipaTile	Model Name ：	zt.zwuszbee
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 2	Polarization：	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
960.0000	6.47	26.63	33.10	46.00	-12.90	peak
928.0000	6.88	25.29	32.17	46.00	-13.83	peak
614.0000	7.10	19.82	26.92	46.00	-19.08	peak
902.0000	6.95	24.16	31.11	46.00	-14.89	peak

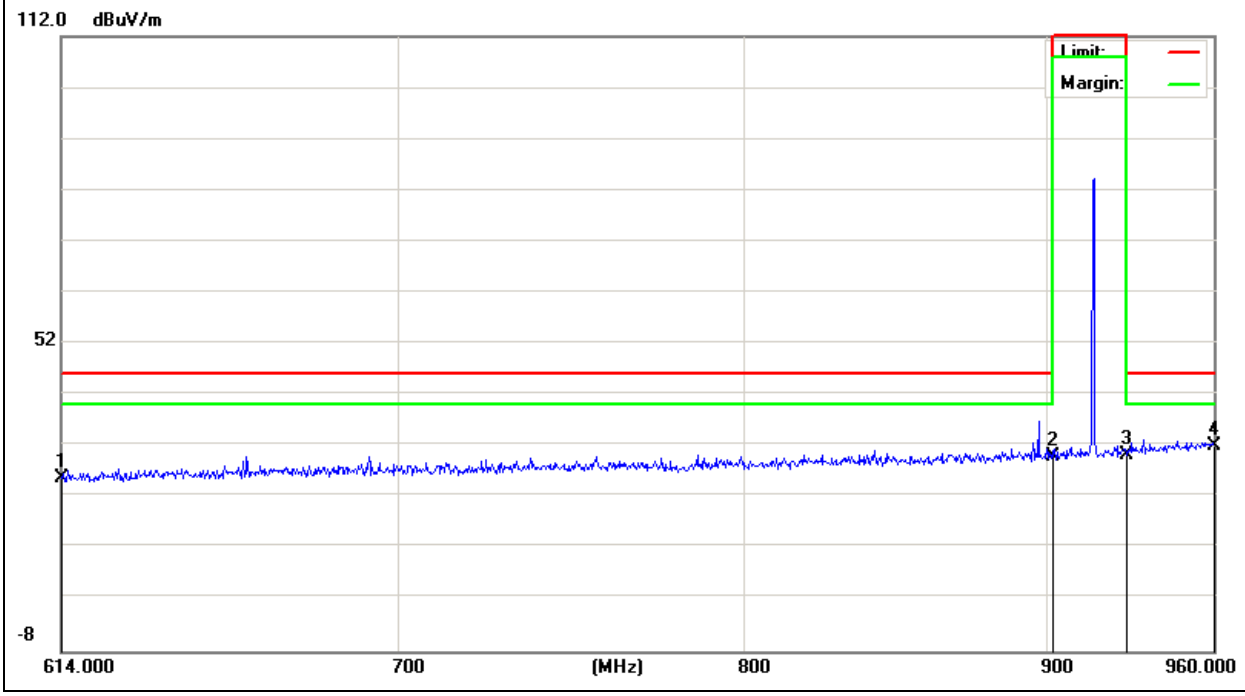
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	ZipaTile	Model Name ：	zt.zwuszbee
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 2	Polarization：	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
614.0000	5.90	19.82	25.72	46.00	-20.28	peak
902.0000	5.93	24.16	30.09	46.00	-15.91	peak
928.0000	5.08	25.29	30.37	46.00	-15.63	peak
960.0000	5.48	26.63	32.11	46.00	-13.89	peak

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



4. BANDWIDTH TEST

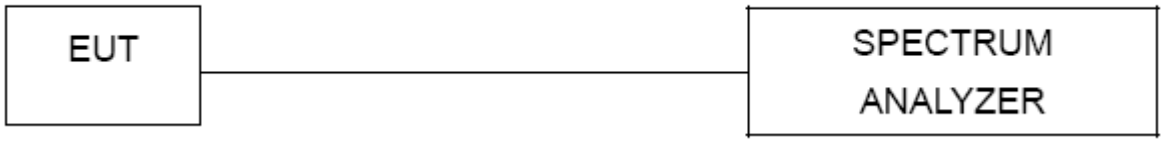
4.1 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 100KHz, VBW≧RBW, Sweep time = Auto.

4.2 DEVIATION FROM STANDARD

No deviation.

4.3 TEST SETUP

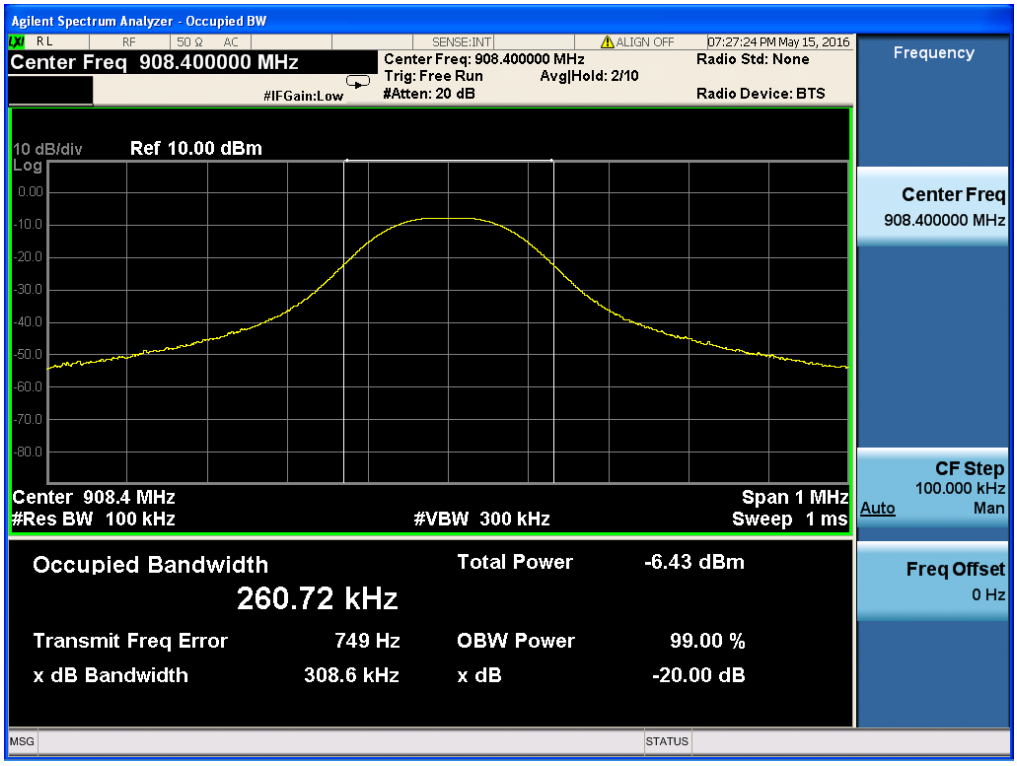


4.4 TEST RESULTS

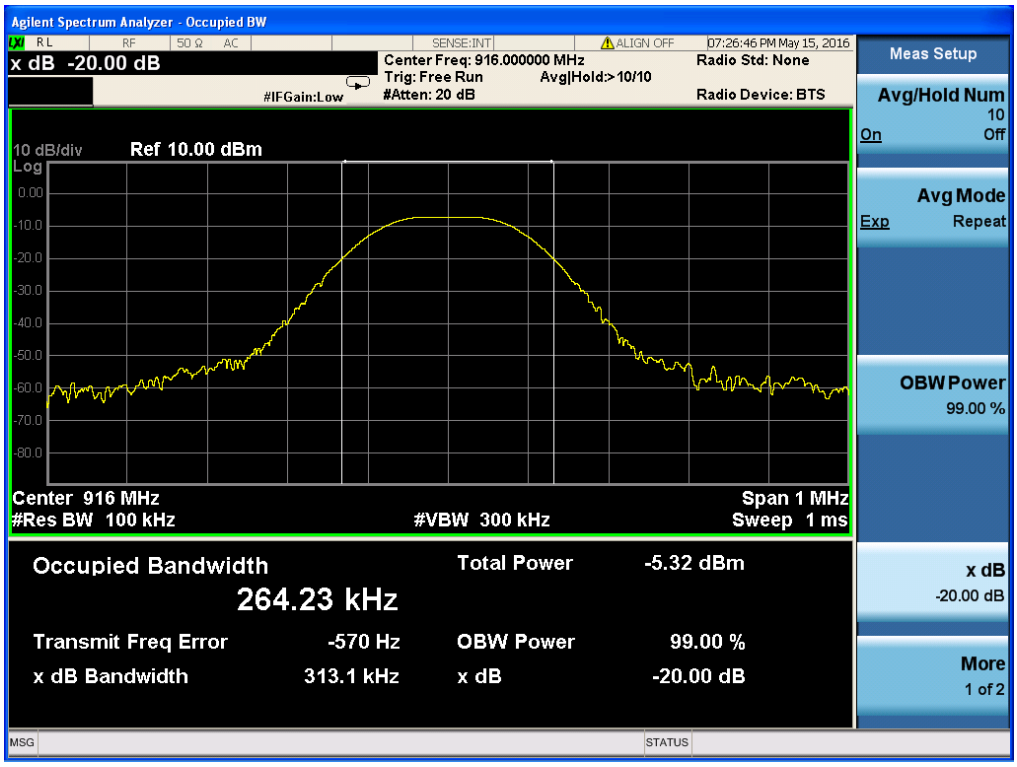
EUT：	ZipaTile	Model Name ：	zt.zwuszbee
Temperature：	26 ℃	Relative Humidity：	53%
Pressure：	1020 hPa	Test Power ：	DC 5V for Adapter AC 120V/60Hz
Test Mode ：	TX		

Test Channel	Frequency (MHz)	20 dBc Bandwidth (KHz)
CH01	908.4	308.6
CH02	916.0	313.1

908.4 MHz

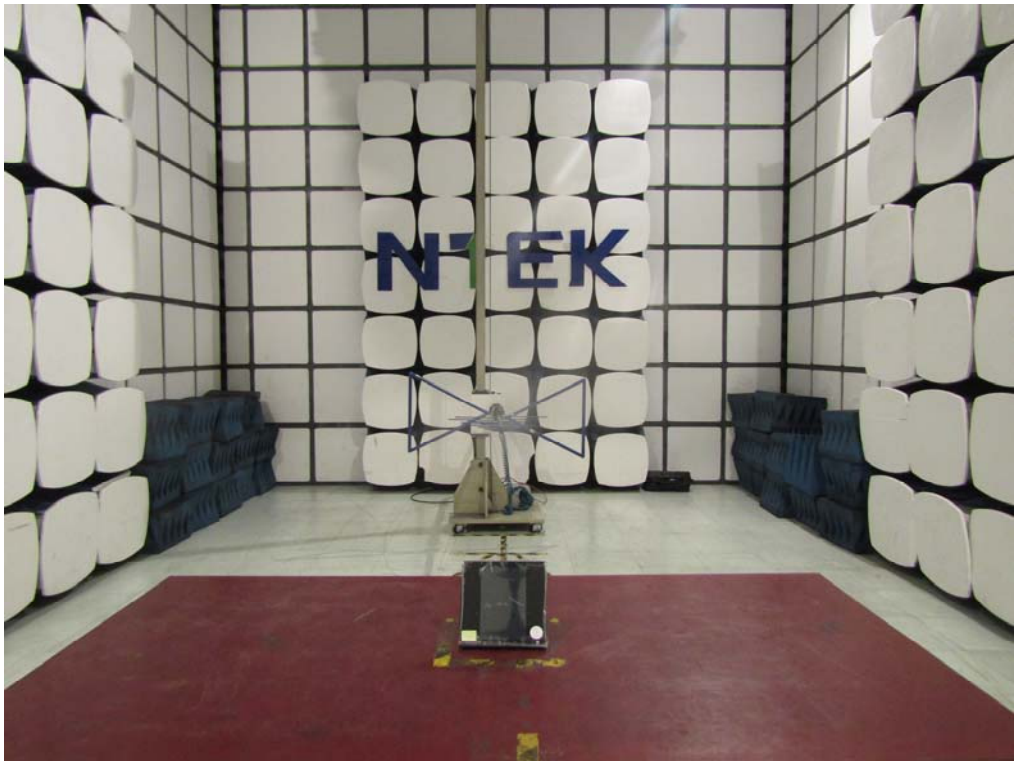


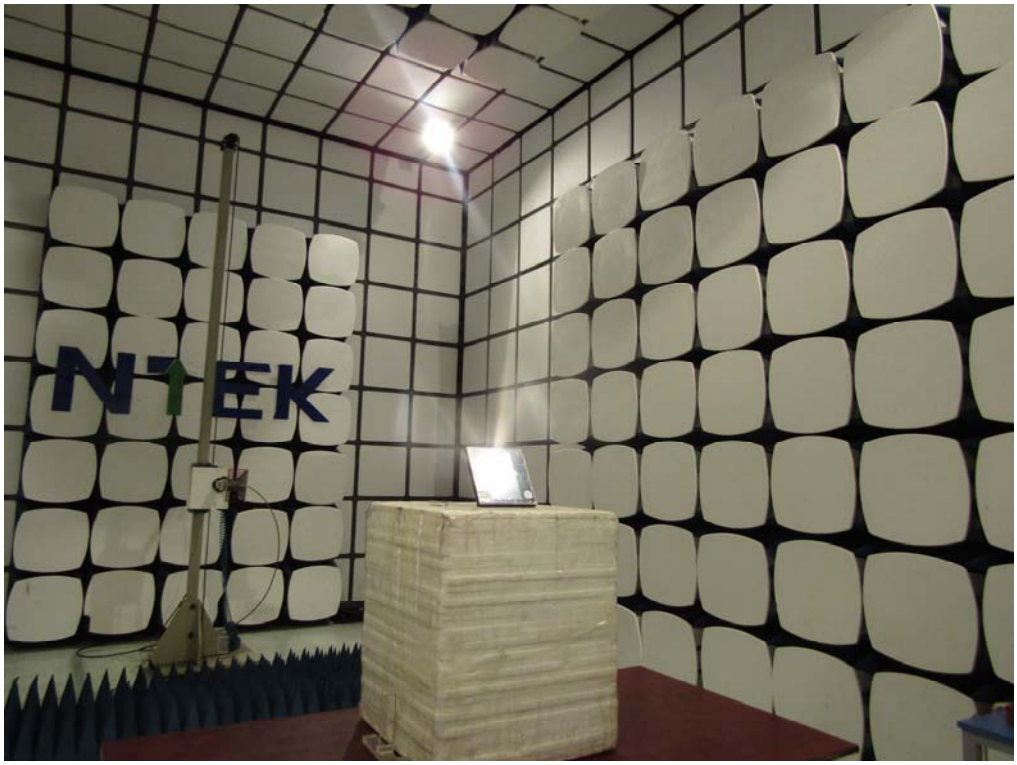
916.0 MHz


Agilent Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN OFF
07:26:46 PM May 15, 2016
x dB -20.00 dB
Center Freq: 916.000000 MHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 20 dB
Radio Std: None
Radio Device: BTS
Meas Setup
Avg/Hold Num
10
On
Off
Avg Mode
Exp
Repeat
OBW Power
99.00 %
x dB
-20.00 dB
More
1 of 2
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 916 MHz
#Res BW 100 kHz
#VBW 300 kHz
Span 1 MHz
Sweep 1 ms
Occupied Bandwidth
264.23 kHz
Total Power
-5.32 dBm
Transmit Freq Error
-570 Hz
OBW Power
99.00 %
x dB Bandwidth
313.1 kHz
x dB
-20.00 dB
MSG
STATUS

5. EUT TEST PHOTO

Radiated Measurement Photos





CONDUCTED EMISSION Photos