ETSI EN 300 086-1 V1.4.1 (2010-06)
ETSI EN 300 086-2 V1.3.1 (2010-06)

TEST REPORT

For

TYT ELECTRONICS CO., LTD

Block 39-1, Optoelectronics-information industry b, Nan’ an, Quanzhou, Fujian China

Tested Model: MD-380
Multiple Model: MD-390,MD-368,MD-398

Report Type:	**Product Type:**
Original Report	DMR

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Report Number: RSZ150527001-22B

Report Date: 2015-07-02

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *TYT ELECTRONICS CO., LTD*'s product, model number: *MD-380* or the "EUT" in this report was a *DMR*, which was measured approximately: 131 mm (L) × 61 mm (W) × 36 mm (H), rated with input voltage: DC 7.4VLi-io rechargeable battery.

Note: This series products model: MD-390, MD-368, MD-398 and MD-380 are identical schematics, the difference among them is just the model number due to marketing purpose, and model MD-380 was selected for fully testing, the detailed information can be referred to the attached declaration letter that stated and guaranteed by the applicant.

** All measurement and test data in this report was gathered from production sample serial number: 1505197 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2015-05-27.*

Objective

This report is prepared on behalf of *TYT ELECTRONICS CO., LTD* in accordance with ETSI EN 300 086-1 V1.4.1 (2010-06), Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment with an internal or external RF connector intended primarily for analogue speech; Part 1: Technical characteristics and methods of measurement; ETSI EN 300 086-2 V1.3.1 (2010-06), Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment with an internal or external RF connector intended primarily for analogue speech; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive.

The objective is to determine the compliance of the EUT with ETSI EN 300 086-1 V1.4.1 (2010-06) and ETSI EN 300 086-2 V1.3.1 (2010-06).

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with ETSI EN 300 086-1 V1.4.1 (2010-06).

Measurement uncertainty:

Parameter	Uncertainty
Radio Frequency	±1×10^{-7}
RF Couducted Power	±0.5 dB
Radiated RF power	±4.92 dB
Adjacent channel power	±1.5 dB
Maximum frequency deviation	2 %
Conducted spurious emission of transmitter	±1.5 dB
Conducted spurious emission of Receiver	±1.5 dB
Two-signal measurement	±2.5 dB
Three-signal measurement	±2.5 dB
Radiated emission of the transmitter	±4.9 dB
Radiated emission of the receiver	±4.9 dB
Transmitter intermodulation	±2.0 dB
Receiver desensitization	±0.5 dB
Temperature	±1.0 ℃
Humidity	±6 %

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

No exercise software was used.

Special Accessories

No special accessory was used.

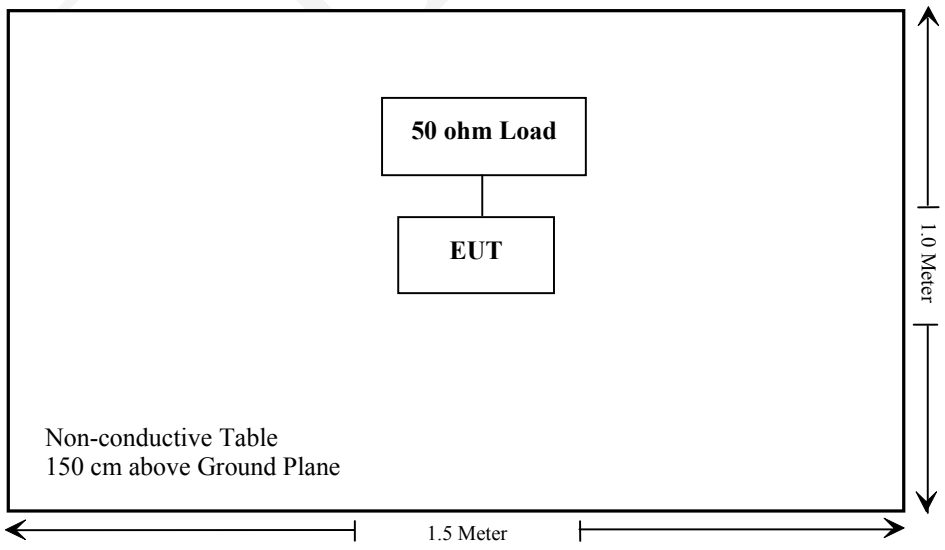
Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
N/A	50 ohm Load	N/A	N/A

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

ETSI EN 300 086-1 V1.4.1 (2010-06)

ETSI EN 300 086-1 V1.4.1 (2010-06)	Description of Test	Test Result
§ 7.4	Frequency Deviation	Compliance

ETSI EN 300 086-2 V1.3.1 (2010-06)

ETSI EN 300 086-2 V1.3.1 (2010-06)	Description of Test	Test Result
§ 4.2.1	Frequency error	Compliance
§ 4.2.2	Transmitter power (conducted)	Compliance
§ 4.2.3	Maximum effective radiated power	Not application
§ 4.2.4	Adjacent and alternate channel power	Compliance
§ 4.2.5	Unwanted emissions in the spurious domain	Compliance
§ 4.3.7	Receiver spurious radiations	Compliance

Not application: The EUT has an internal antenna connector.

ETSI EN 300 086-1 V1.4.1 (2010-06) §7.4 - FREQUENCY DEVIATION

Applicable Standard

According to ETSI EN 300 086-1 V1.4.1 (2010-06) §7.4.1, the frequency deviation is the maximum difference between the instantaneous frequency of the modulated radio frequency signal and the carrier frequency in the absence of modulation.

The maximum permissible frequency deviation is the maximum value of frequency deviation stated for the relevant channel separation.

Limits

Maximum permissible frequency deviation

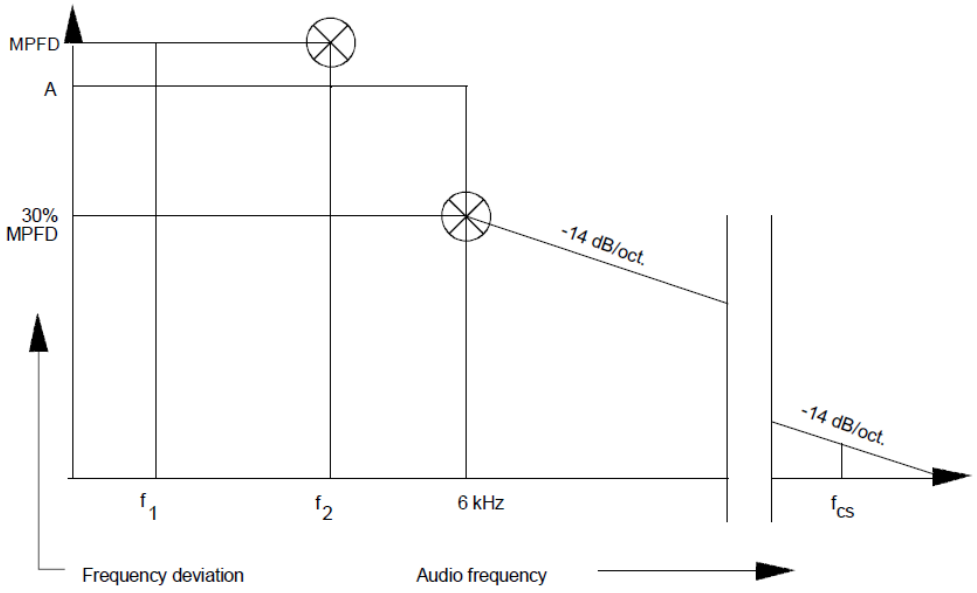
The maximum permissible frequency deviation for modulation frequencies from the lowest frequency transmitted (f_1) by the equipment (as declared by the manufacturer) up to (f_2) shall be as given in table.

Channel separation (kHz)	Maximum permissible frequency deviation (kHz)
12,5	±2,5
20	±4,0
25	±5,0

Response of the transmitter to modulation frequencies above 3 kHz

The frequency deviation at modulation frequencies between 3,0 kHz (for equipment operating with 20 kHz or 25 kHz channel separations) and 2,55 kHz (for equipment operating with 12,5 kHz channel separation) and 6,0 kHz shall not exceed the frequency deviation at a modulation frequency of 3,0 kHz/2,55 kHz. At 6,0 kHz the deviation shall be not more than 30,0 % of the maximum permissible frequency deviation.

The frequency deviation at modulation frequencies between 6,0 kHz and a frequency equal to the channel separation for which the equipment is intended shall not exceed that given by a linear representation of the frequency deviation (dB) relative to the modulation frequency, starting at the 6,0 kHz limit and having a slope of -14,0 dB per octave. These limits are illustrated in following figure.



NOTE: Abbreviations:
f_1 = lowest appropriate frequency
f_2 = 3,0 kHz (for 20 kHz or 25 kHz channel separation), or
2,55 kHz (for 12,5 kHz channel separation)
MPFD = Maximum Permissible Frequency Deviation, see clause 7.4.3.1
A = measured frequency deviation at f_2
F_{cs} = frequency equal to channel separation

Method of measurement

Maximum permissible frequency deviation

The maximum permissible frequency deviation (positive or negative) shall be measured at the output of the transmitter connected to a 50 Ω power attenuator, by means of a deviation metre capable of measuring the maximum permissible frequency deviation, including that due to any harmonics and intermodulation products which may be generated in the transmitter.

The modulation frequency shall be varied between the lowest frequency considered to be appropriate, and 3 kHz (see note).

NOTE: 2,55 kHz for transmitters intended for 12,5 kHz channel separation

The level of this test signal shall be 20 dB above the level of the normal test modulation, clause 6.1.
The transmitter shall be operated under normal test conditions, see clause 5.3.

Response of the transmitter to modulation frequencies above 3 kHz

The transmitter shall be operated under normal test conditions, clause 5.3, and connected via a 50 Ω power attenuator to the deviation metre.

The transmitter shall be modulated by normal test modulation, clause 6.1.

With a constant input level of the modulation signal, the modulation frequency shall be varied between 3 kHz (see note) and a frequency equal to the channel separation for which the equipment is intended.

NOTE: 2,55 kHz for transmitters intended for 12,5 kHz channel separation.

The maximum (positive or negative) frequency deviation shall be measured by means of the deviation metre.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	RF Communication Test Set	HP8920A	3438A05201	2015-06-12	2016-06-11

Test Data

Environmental Conditions

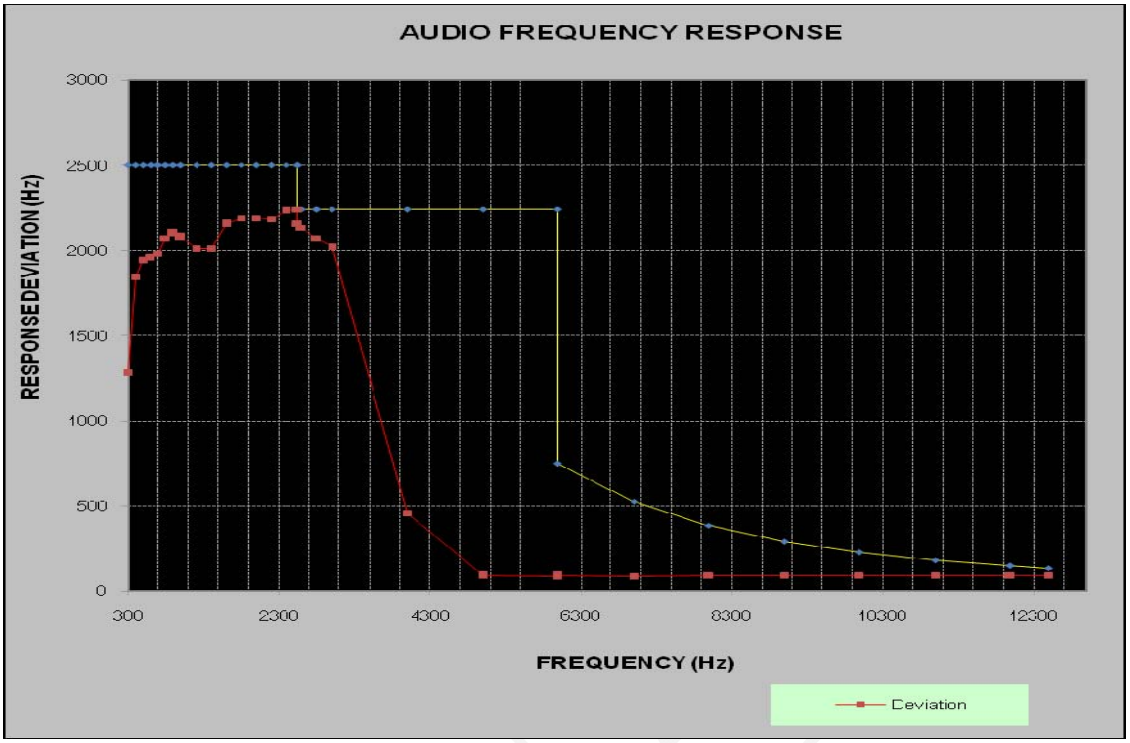
Temperature:	22 ℃
Relative Humidity:	45 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li on 2015-06-13.

Test Mode: Transmitting

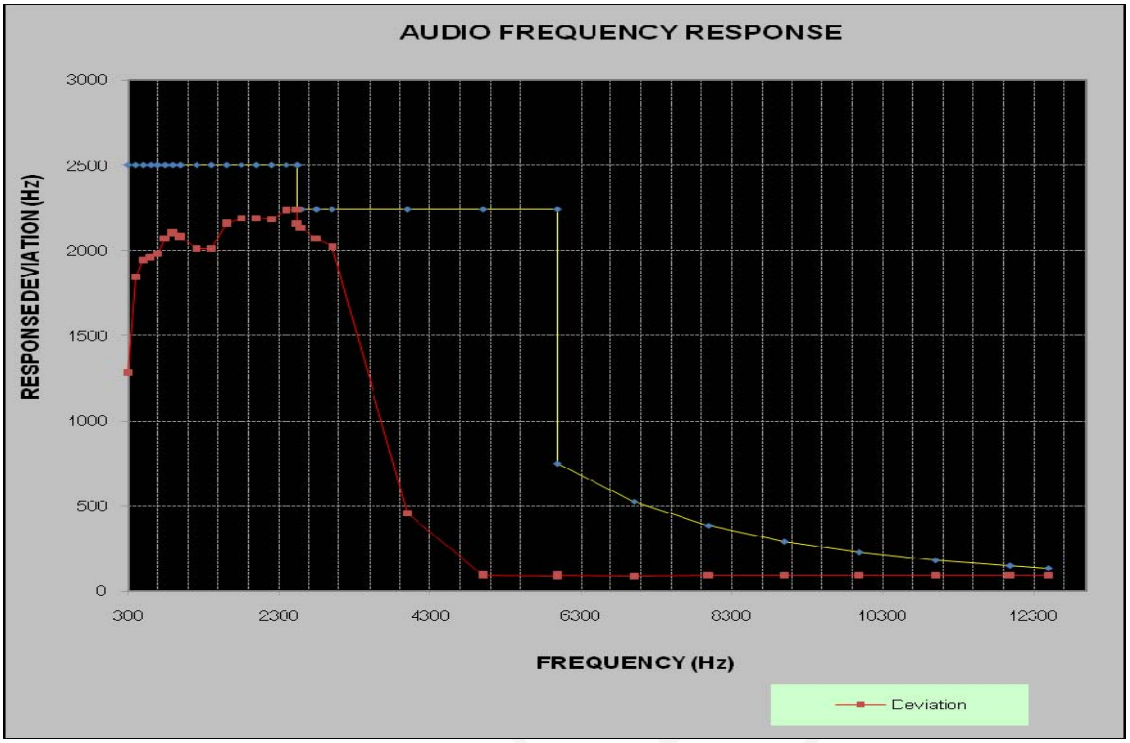
Carrier Frequency: 400.0125 MHz, Channel Spacing: 12.5 kHz

Modulation Frequency (Hz)	Maximum Deviation (Hz)	Limit (Hz)
300	1286	2500
400	1845	2500
500	1946	2500
600	1961	2500
700	1980	2500
800	2071	2500
900	2098	2500
1000	2077	2500
1200	2011	2500
1400	2014	2500
1600	2155	2500
1800	2191	2500
2000	2189	2500
2200	2184	2500
2400	2234	2500
2550	2241	2500
2550	2158	2241
2600	2132	2241
2800	2069	2241
3000	2022	2241
4000	459	2241
5000	91	2241
6000	90	2241
6000	91	750
7000	90	524
8000	92	384
9000	93	292
10000	94	229
11000	92	183
12000	95	150
12500	93	136


AUDIO FREQUENCY RESPONSE
RESPONSEDEVIATION (Hz)
3000
2500
2000
1500
1000
500
0
300
2300
4300
6300
8300
10300
12300
FREQUENCY (Hz)
Deviation

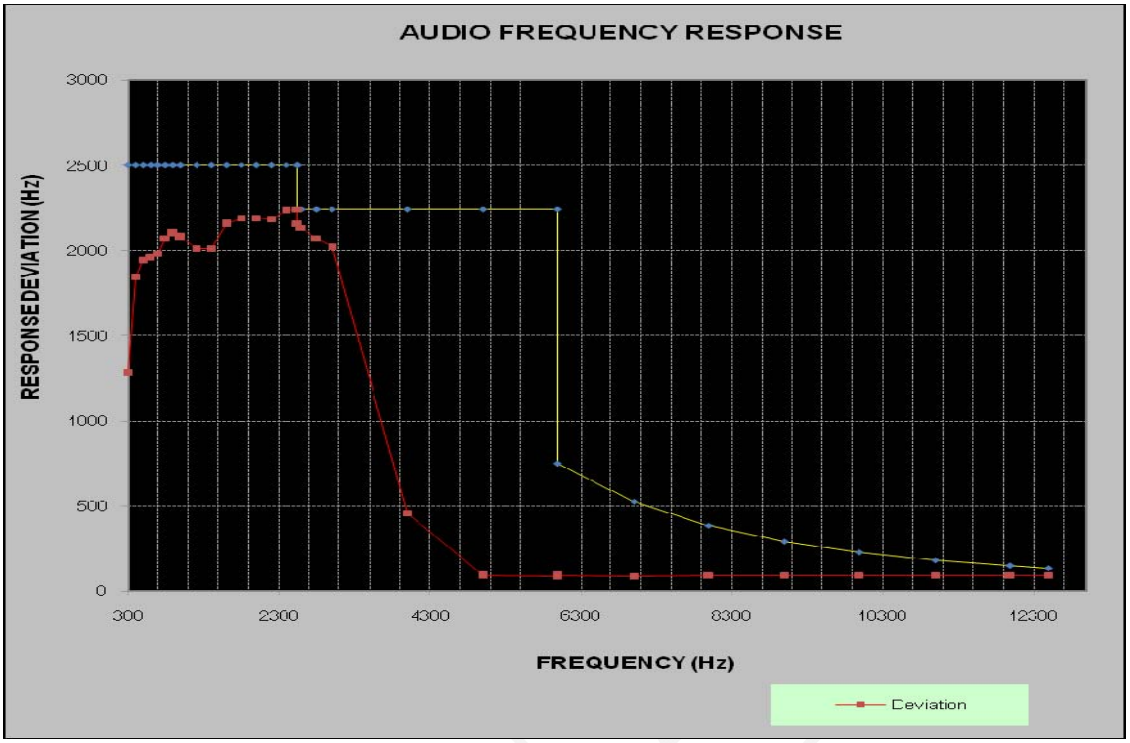
Carrier Frequency: 450.0125 MHz, Channel Spacing: 12.5 kHz

Modulation Frequency (Hz)	Maximum Deviation (Hz)	Limit (Hz)
300	1290	2500
400	1857	2500
500	1952	2500
600	1963	2500
700	1981	2500
800	2073	2500
900	2102	2500
1000	2085	2500
1200	2013	2500
1400	2103	2500
1600	2149	2500
1800	2193	2500
2000	2190	2500
2200	2185	2500
2400	2235	2500
2550	2242	2500
2550	2168	2242
2600	2135	2242
2800	2072	2242
3000	2033	2242
4000	464	2242
5000	95	2242
6000	92	2242
6000	92	750
7000	91	524
8000	93	384
9000	92	292
10000	95	229
11000	92	183
12000	96	150
12500	94	136


AUDIO FREQUENCY RESPONSE
RESPONSEDEVIATION (Hz)
3000
2500
2000
1500
1000
500
0
300
2300
4300
6300
8300
10300
12300
FREQUENCY (Hz)
Deviation

Carrier Frequency: 479.9875 MHz, Channel Spacing: 12.5 kHz

Modulation Frequency (Hz)	Maximum Deviation (Hz)	Limit (Hz)
300	1279	2500
400	1843	2500
500	1944	2500
600	1952	2500
700	1967	2500
800	2054	2500
900	2091	2500
1000	2072	2500
1200	2008	2500
1400	2012	2500
1600	2151	2500
1800	2187	2500
2000	2186	2500
2200	2182	2500
2400	2231	2500
2550	2237	2500
2550	2178	2237
2600	2129	2237
2800	2066	2237
3000	2018	2237
4000	467	2237
5000	93	2237
6000	91	2237
6000	91	750
7000	92	524
8000	92	384
9000	93	292
10000	94	229
11000	93	183
12000	94	150
12500	93	136


AUDIO FREQUENCY RESPONSE
RESPONSEDEVIATION (Hz)
3000
2500
2000
1500
1000
500
0
300
2300
4300
6300
8300
10300
12300
FREQUENCY (Hz)
Deviation

ETSI EN 300 086-2 V1.3.1 (2010-06) §4.2.1 - FREQUENCY ERROR

Applicable Standard

According to ETSI EN 300 086-1 V1.4.1 (2010-06) §7.1.1, the frequency error of the transmitter is the difference between the measured carrier frequency in the absence of modulation and the nominal frequency of the transmitter.

The frequency error shall not exceed the values given in table 2, under normal and extreme test conditions.

Table 2

Channel separation (kHz)	Frequency error limit (kHz)				
	below 47 MHz	47 MHz to 137 MHz	above 137 MHz to 300 MHz	above 300 MHz to 500 MHz	above 500 MHz to 1 000 MHz
20 and 25	±0,60	±1,35	±2,00	±2,00	±2,50 (a)
12,5	±0,60	±1,00	±1,00 (B) ±1,50 (M)	±1,00 (B) ±1,50 (a) (M)	±1,5 (B) ±2,5 (a) (M)

NOTE: (B) = base station.
(M) = mobile or hand portable station.
(a) = for hand portable stations having integral power supplies, the frequency error shall not be exceeded over a temperature range of 0 °C to + 40 °C.
Under extreme temperature conditions (clause 5.4.1), the frequency error shall not exceed ±2,50 kHz for a channel separation of 12,5 kHz between 300 MHz and 500 MHz, and ±3,00 kHz for channel separations of 20 kHz and 25 kHz between 500 MHz and 1 000 MHz.

Method of measurement

The equipment shall operate in continuous transmission mode during the time necessary to perform the measurement of the frequency.

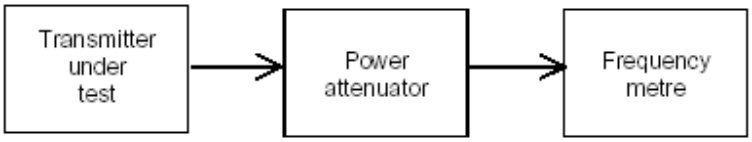


Figure 2: Measurement arrangement

The equipment shall be connected to the artificial antenna. The measurement arrangement in figure 2 shall be used. The carrier frequency shall be measured in the absence of modulation. The measurement shall be made under normal test conditions (see clause 5.3) and extreme test conditions (see clause 5.4).

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Hewlett-Packard	Frequency Counter	5343A	2232A00827	2013-05-09	2016-05-08
Long Wei	DC Power Supply	TPR-6420D	398363	NCR	NCR
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2014-11-01	2015-11-01

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22 ℃
Relative Humidity:	45 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li on 2015-06-13.

Test Mode: Transmitting

Frequency: 400.0125 MHz--Lowest Power						
Reference Frequency (MHz)	**Channel separation (kHz)**	**Temperature (℃)**	**Power supplied (V_{DC})**	**MCF (MHz)**	**Error (kHz)**	**Limit (kHz)**
Normal test condition						
400.0125	12.5	25.0	7.4	400.012565	0.065	±1.5
Extreme test condition						
400.0125	12.5	Tmin = -20	Vmax =7.4	400.012565	0.065	±2.5
		Tmin = -20	Vmin =6.4	400.012574	0.074	
		Tmax = +55	Vmax =7.4	400.012583	0.083	
		Tmax = +55	Vmin =6.4	400.012572	0.072	
Frequency: 400.0125 MHz --Highest Power						
Reference Frequency (MHz)	**Channel separation (kHz)**	**Temperature (℃)**	**Power supplied (V_{DC})**	**MCF (MHz)**	**Error (kHz)**	**Limit (kHz)**
Normal condition						
400.0125	12.5	25.0	7.4	400.012563	0.063	±1.5
Extreme test condition						
400.0125	12.5	Tmin = -20	Vmax =7.4	400.012566	0.066	±2.5
		Tmin = -20	Vmin =6.4	400.012573	0.073	
		Tmax = +55	Vmax =7.4	400.012563	0.063	
		Tmax = +55	Vmin =6.4	400.012586	0.086	

Frequency: 450.0125 MHz--Lowest Power						
Reference Frequency (MHz)	**Channel separation (kHz)**	**Temperature (℃)**	**Power supplied (V_{DC})**	**MCF (MHz)**	**Error (kHz)**	**Limit (kHz)**
Normal test condition						
450.0125	12.5	25.0	7.4	450.012568	0.068	±1.5
Extreme test condition						
450.0125	12.5	Tmin = -20	Vmax =7.4	450.012578	0.078	±2.5
		Tmin = -20	Vmin =6.4	450.012594	0.094	
		Tmax = +55	Vmax =7.4	450.012573	0.073	
		Tmax = +55	Vmin =6.4	450.012568	0.068	
Frequency: 450.0125 MHz --Highest Power						
Reference Frequency (MHz)	**Channel separation (kHz)**	**Temperature (℃)**	**Power supplied (V_{DC})**	**MCF (MHz)**	**Error (kHz)**	**Limit (kHz)**
Normal condition						
450.0125	12.5	25.0	7.4	450.012570	0.070	±1.5
Extreme test condition						
450.0125	12.5	Tmin = -20	Vmax =7.4	450.012586	0.086	±2.5
		Tmin = -20	Vmin =6.4	450.012574	0.074	
		Tmax = +55	Vmax =7.4	450.012589	0.089	
		Tmax = +55	Vmin =6.4	450.012570	0.070	

Frequency: 479.9875MHz--Lowest Power						
Reference Frequency (MHz)	**Channel separation (kHz)**	**Temperature (℃)**	**Power supplied (V_{DC})**	**MCF (MHz)**	**Error (kHz)**	**Limit (kHz)**
Normal test condition						
479.9875	12.5	25.0	7.4	479.987571	0.071	±1.5
Extreme test condition						
479.9875	12.5	Tmin = -20	Vmax =7.4	479.987579	0.079	±2.5
		Tmin = -20	Vmin =6.4	479.987581	0.081	
		Tmax = +55	Vmax =7.4	479.987577	0.077	
		Tmax = +55	Vmin =6.4	479.987571	0.071	
Frequency: 479.9875 MHz --Highest Power						
Reference Frequency (MHz)	**Channel separation (kHz)**	**Temperature (℃)**	**Power supplied (V_{DC})**	**MCF (MHz)**	**Error (kHz)**	**Limit (kHz)**
Normal condition						
479.9875	12.5	25.0	7.4	479.987572	0.072	±1.5
Extreme test condition						
479.9875	12.5	Tmin = -20	Vmax =7.4	479.987582	0.082	±2.5
		Tmin = -20	Vmin =6.4	479.987572	0.072	
		Tmax = +55	Vmax =7.4	479.987578	0.078	
		Tmax = +55	Vmin =6.4	479.987574	0.074	

Test Result: Compliance

ETSI EN 300 086-2 V1.3.1 (2010-06) §4.2.2- TRANSMITTER POWER (CONDUCTED)

Applicable Standard

According to ETSI EN 300 086-1 V1.4.1 (2010-06) §7.2.1, the transmitter power (conducted) is the mean power delivered to the artificial antenna during a radio frequency cycle, in the absence of modulation.

The rated output power is the transmitter power (conducted) of the equipment declared by the manufacturer.

Limit

The transmitter power (conducted) under the specified conditions of measurement (see clause 7.2.2) and at normal test conditions (see clause 5.3), shall be within ±1,5 dB of the rated carrier power (conducted). The transmitter power (conducted) under extreme test conditions (see clause 5.4) shall be within +2,0 dB and -3,0 dB of the rated output power.

NOTE: It is assumed that the appropriate National Administration will state the maximum permitted transmitter output power.

Method of measurement

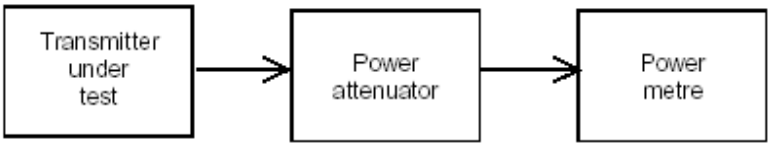


Figure 3: Measurement arrangement

The transmitter shall be connected to a 50Ω power attenuator, and the power delivered to this artificial antenna shall be measured.

The measurement shall be made under normal test conditions, and repeated under extreme test conditions, Extreme temperatures and Extreme test source voltages applied simultaneously.

For practical reasons, measurements shall be performed only at the lowest and highest power level at which the transmitter is intended to operate.
The measurement arrangement in figure 3 shall be used.
The measurement shall be performed in the absence of modulation.
The transmitter shall be set in continuous transmission mode.
The transmitter shall be connected to a power attenuator and the mean power delivered to this artificial antenna shall be measured.
The measurement shall be made under normal test conditions (see clause 5.3) and extreme test conditions (see clause 5.4).

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	837405/023	2014-08-22	2015-08-22
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2014-11-01	2015-11-01
Long Wei	DC Power Supply	TPR-6420D	398363	NCR	NCR

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	25℃
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li on 2015-06-09.

Test Result: Pass

Test Mode: Transmitting

Highest RF output power (conducted) for low channel: 400.0125MHz

Test Conditions		Measured Power (dBm)	Rated Power (dBm)	Limit (dB)	Channel Separation(kHz)
Temperature (^{O}C)	Power Supply (V_{DC})				
Tnor = 25	Vmax =7.4	37.24	37	±1.5	12.5
Tmin = -20	Vmin =6.4	37.22	37	-3.0,+2.0	
	Vmax =7.4	37.18	37	-3.0,+2.0	
Tmax = +55	Vmin =6.4	37.28	37	-3.0,+2.0	
	Vmax =7.4	37.14	37	-3.0,+2.0	

Lowest RF output power (conducted) for low channel: 400.0125MHz

Test Conditions		Measured Power (dBm)	Rated Power (dBm)	Limit (dB)	Channel Separation(kHz)
Temperature (^{O}C)	Power Supply (V_{DC})				
Tnor = 25	Vnor =7.4	30.17	30	±1.5	12.5
Tmin = -20	Vmin =6.4	30.15	30	-3.0,+2.0	
	Vmax =7.4	30.13	30	-3.0,+2.0	
Tmax = +55	Vmin =6.4	30.14	30	-3.0,+2.0	
	Vmax =7.4	30.12	30	-3.0,+2.0	

Highest RF output power (conducted) for Middle channel: 450.0125MHz

Test Conditions		Measured Power (dBm)	Rated Power (dBm)	Limit (dB)	Channel Separation(kHz)
Temperature (^{O}C)	Power Supply (V_{DC})				
Tnor = 25	Vnor =7.4	37.55	37	±1.5	12.5
Tmin = -20	Vmin =6.4	37.56	37	-3.0,+2.0	
	Vmax =7.4	37.46	37	-3.0,+2.0	
Tmax = +55	Vmin =6.4	37.43	37	-3.0,+2.0	
	Vmax =7.4	37.51	37	-3.0,+2.0	

Lowest RF output power (conducted) for Middle channel: 450.0125MHz

Test Conditions		Measured Power (dBm)	Rated Power (dBm)	Limit (dB)	Channel Separation(kHz)
Temperature (^{O}C)	Power Supply (V_{DC})				
Tnor = 25	Vnor =7.4	30.36	30	±1.5	12.5
Tmin = -20	Vmin =6.4	30.33	30	-3.0,+2.0	
	Vmax =7.4	30.29	30	-3.0,+2.0	
Tmax = +55	Vmin =6.4	30.26	30	-3.0,+2.0	
	Vmax =7.4	30.28	30	-3.0,+2.0	

Highest RF output power (conducted) for High channel: 479.9875MHz

Test Conditions		Measured Power (dBm)	Rated Power (dBm)	Limit (dB)	Channel Separation(kHz)
Temperature (^{O}C)	Power Supply (V_{DC})				
Tnor = 25	Vnor =7.4	37.08	37	±1.5	12.5
Tmin = -20	Vmin =6.4	37.01	37	-3.0,+2.0	
	Vmax =7.4	37.02	37	-3.0,+2.0	
Tmax = +55	Vmin =6.4	37.05	37	-3.0,+2.0	
	Vmax =7.4	37.01	37	-3.0,+2.0	

Lowest RF output power (conducted) for High channel: 479.9875MHz

Test Conditions		Measured Power (dBm)	Rated Power (dBm)	Limit (dB)	Channel Separation(kHz)
Temperature (^{O}C)	Power Supply (V_{DC})				
Tnor = 25	Vnor =7.4	30.13	30	±1.5	12.5
Tmin = -20	Vmin =6.4	30.09	30	-3.0,+2.0	
	Vmax =7.4	30.11	30	-3.0,+2.0	
Tmax = +55	Vmin =6.4	30.06	30	-3.0,+2.0	
	Vmax =7.4	30.08	30	-3.0,+2.0	

Note: The rated high power: 5W=37dBm
The rated low power: 1 W=30Bm

ETSI EN 300 086-2 V1.3.1 (2010-06) §4.2.4 - ADJACENT AND ALTERNATE CHANNEL POWER

Applicable Standard

According to ETSI EN 300 086-2 V1.3.1 (2010-06) §4.2.4, the adjacent and alternate channel power is defined in EN 300 086-1 [1], clause 7.5.1. The adjacent and alternate channel power is that part of the total power output of a transmitter under defined conditions of modulation, which falls within a specified pass-band centred on the nominal frequency of either of the adjacent and alternate channels. This power is the sum of the mean power produced by the modulation, hum and noise of the transmitter.

Limit:

For a channel separation of 12,5 kHz, 20 kHz and 25 kHz, the adjacent channel power shall not exceed a value of 60,0 dB below the transmitter power (conducted) without the need to be below 0,2 µW (-37 dBm).
For a channel separation of 12,5 kHz, 20 kHz and 25 kHz, the alternate channel power shall not exceed a value of 70,0 dB below the transmitter power (conducted) without the need to be below 0,2 µW (-37 dBm).

Method of Measurement

This test measures the power transmitted in the adjacent and alternate channel(s) during continuous modulation.

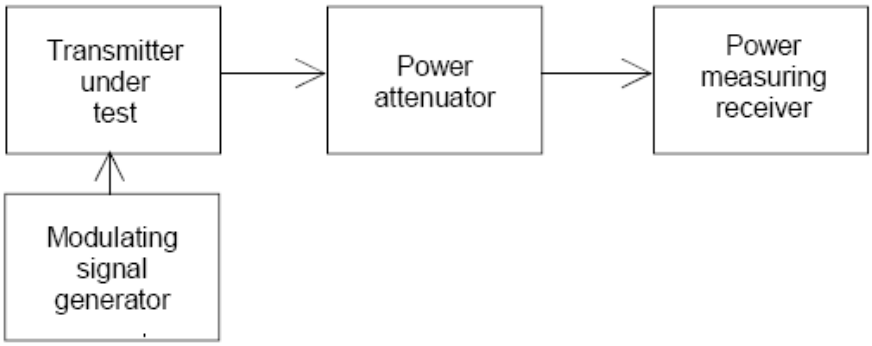


Figure 7: Measurement arrangement

During the test, the transmitter shall be set in continuous transmission mode. If this is not possible, the measurements shall be carried out in a period shorter than the duration of the transmission.
Averaging measurements with 100 samples are possible. The measurement arrangement in figure 7 shall be used.

The adjacent channel power may be measured, as follows, with a power measuring receiver which conforms to annex B (referred to in this clause as the "receiver"):
a) the transmitter shall be operated at the transmitter power determined in clause 7.2 under normal test conditions (see clause 5.3). The output of the transmitter shall be linked to the input of the "receiver" by a connecting device such that the impedance presented to the transmitter is 50 Ω and the level at the "receiver input" is appropriate;
b) with the transmitter unmodulated, the tuning of the "receiver" shall be adjusted so that a maximum response is obtained. This is the 0 dB response point. The "receiver" attenuator setting and the reading of the metre shall be recorded;
c) the frequency of the "receiver" shall be adjusted above the carrier so that the "receiver" -6 dB response nearest to the transmitter carrier frequency is located at a displacement from the nominal carrier frequency as given in table 4a;

Table 4a: Frequency displacement

Channel separation (kHz)	Specified necessary bandwidth (kHz)	Displacement of the -6 dB point from the nominal carrier frequency (kHz)
12,5	8,5	8,25
20	14	13
25	16	17

d) the transmitter shall be modulated by a test signal of 1 250 Hz at a level which is 20 dB higher than that required to produce 60 % of the maximum permissible deviation, clause 7.4.3.1;
e) the "receiver" variable attenuator shall be adjusted to obtain the same metre reading as in step b), or a known relation to it;
f) the ratio of the adjacent channel power to the carrier power is the difference between the attenuator settings in steps b) and e), corrected for any differences in the reading of the metre.

For each adjacent channel, the adjacent channel power shall be recorded.
• the measurement shall be repeated with the frequency of the "receiver" adjusted below the carrier so that the "receiver" -6 dB response nearest to the transmitter carrier frequency is located at a displacement from the nominal carrier frequency as given in table 4a;
• the adjacent channel power of the equipment under test shall be expressed as the higher of the two values recorded in step f) for the upper and lower channels nearest to the channel considered. Steps c) to f) shall be repeated for the alternate channels with the values in table 4b.

Table 4b: Frequency displacement

Channel separation (kHz)	Specified necessary bandwidth (kHz)	Displacement of the -6 dB point from the nominal carrier frequency (kHz)
12,5	8,5	20,25
20	14	33
25	16	42

For each alternate channel, the alternate channel power shall be recorded.
• the measurement shall be repeated with the frequency of the "receiver" adjusted below the carrier so that the "receiver" -6 dB response nearest to the transmitter carrier frequency is located at a displacement from the nominal carrier frequency as given in table 4b;

• the alternate channel power of the equipment under test shall be expressed as the higher of the two values recorded in step f) for the upper and lower channels nearest to the channel considered.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP Agilent	RF Communication Test Set	8920A	3325U00859	2015-05-07	2016-05-07
Rohde & Schwarz	Signal Analyzer	FSIQ26	837405/023	2014-08-22	2015-08-22

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	26℃
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li from 2015-06-29 to 2015-07-06.

Test Result: Pass, please see the below tables and plots

Test Mode: Transmitting

Low Channel(400.0125MHZ)

Channel separation 12.5 kHz

For Highest output power:

Channel Frequency (MHz)	Channel Separation (kHz)	Adjacent Channel (kHz)	Adjacent Channel Ratio (dB)	EN 300 086-2 Limit (dB)
400.0125	12.5	-12.5	-63.91	-60.0
		+12.5	-65.54	-60.0

Channel Frequency (MHz)	Channel Separation (kHz)	Alternate Channel (kHz)	Alternate Channel Ratio (dB)	EN 300 086-2 Limit (dB)
400.0125	12.5	-20.25	-73.95	-70
		+20.25	-73.90	-70

For Lowest output power:

Channel Frequency (MHz)	Channel Separation (kHz)	Adjacent Channel (kHz)	Adjacent Channel Ratio (dB)	EN 300 086-2 Limit (dB)
400.0125	12.5	-12.5	-63.96	-60.0
		+12.5	-65.97	-60.0

Channel Frequency (MHz)	Channel Separation (kHz)	Alternate Channel (kHz)	Alternate Channel Ratio (dB)	EN 300 086-2 Limit (dB)
400.0125	12.5	-20.25	-73.58	-70
		+20.25	-73.95	-70

Middle Channel（450.0125MHZ）

Channel separation 12.5 kHz

For Highest output power:

Channel Frequency (MHz)	Channel Separation (kHz)	Adjacent Channel (kHz)	Adjacent Channel Ratio (dB)	EN 300 086-2 Limit (dB)
450.0125	12.5	-12.5	-61.12	-60.0
		+12.5	-63.39	-60.0

Channel Frequency (MHz)	Channel Separation (kHz)	Alternate Channel (kHz)	Alternate Channel Ratio (dB)	EN 300 086-2 Limit (dB)
450.0125	12.5	-20.25	-72.07	-70
		+20.25	-71.94	-70

For Lowest output power:

Channel Frequency (MHz)	Channel Separation (kHz)	Adjacent Channel (kHz)	Adjacent Channel Ratio (dB)	EN 300 086-2 Limit (dB)
450.0125	12.5	-12.5	-61.70	-60.0
		+12.5	-64.30	-60.0

Channel Frequency (MHz)	Channel Separation (kHz)	Alternate Channel (kHz)	Alternate Channel Ratio (dB)	EN 300 086-2 Limit (dB)
450.0125	12.5	-20.25	-72.61	-70
		+20.25	-72.66	-70

High Channel（479.9875MHZ）

Channel separation 12.5 kHz

For Highest output power:

Channel Frequency (MHz)	Channel Separation (kHz)	Adjacent Channel (kHz)	Adjacent Channel Ratio (dB)	EN 300 086-2 Limit (dB)
479.9875	12.5	-12.5	-63.28	-60.0
		+12.5	-64.92	-60.0

Channel Frequency (MHz)	Channel Separation (kHz)	Alternate Channel (kHz)	Alternate Channel Ratio (dB)	EN 300 086-2 Limit (dB)
479.9875	12.5	-20.25	-72.89	-70
		+20.25	-72.50	-70

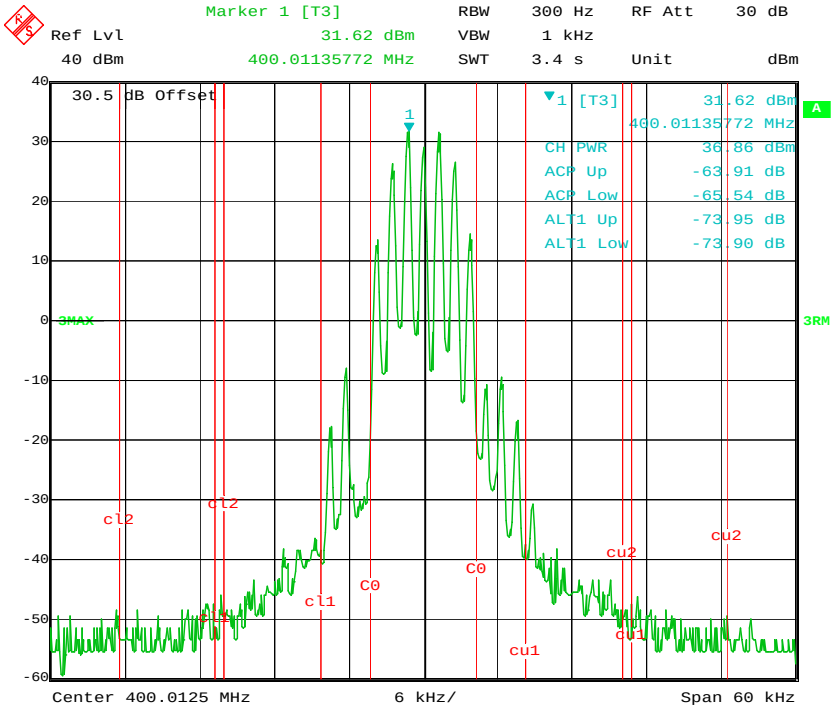
For Lowest output power:

Channel Frequency (MHz)	Channel Separation (kHz)	Adjacent Channel (kHz)	Adjacent Channel Ratio (dB)	EN 300 086-2 Limit (dB)
479.9875	12.5	-12.5	-63.98	-60.0
		+12.5	-65.83	-60.0

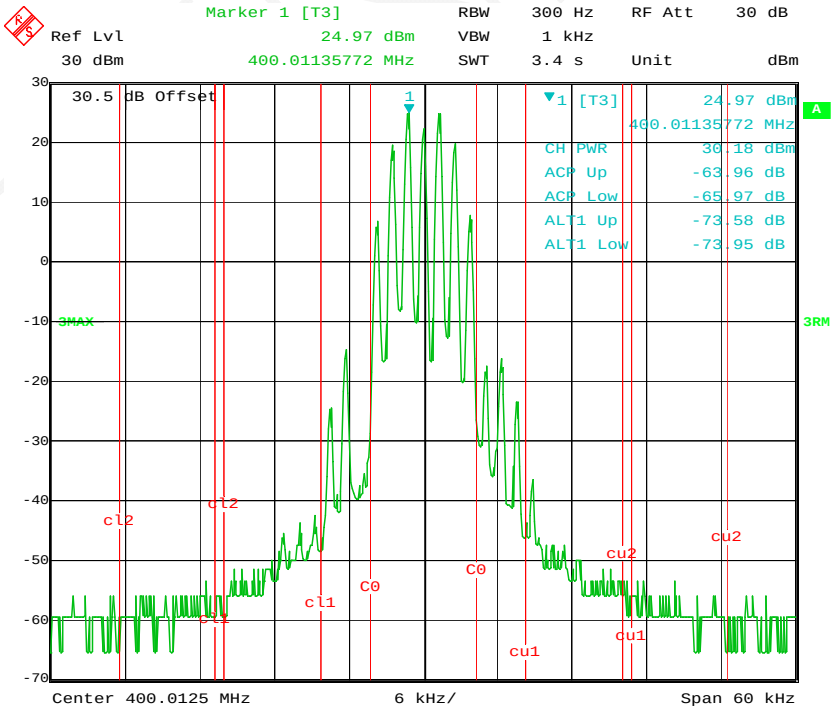
Channel Frequency (MHz)	Channel Separation (kHz)	Alternate Channel (kHz)	Alternate Channel Ratio (dB)	EN 300 086-2 Limit (dB)
479.9875	12.5	-20.25	-72.53	-70
		+20.25	-72.84	-70

Result: Pass

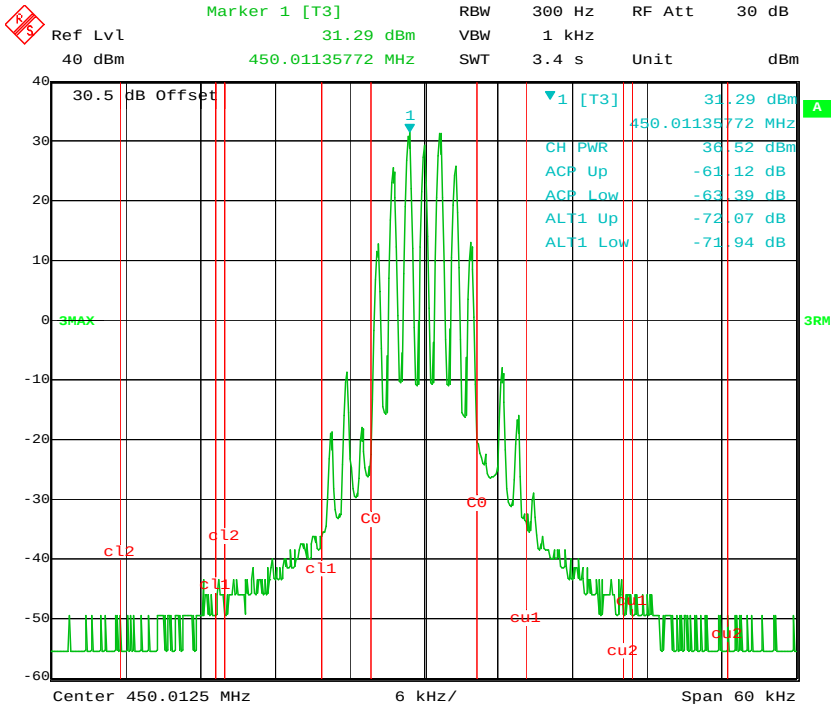
400.0125 MHz, Highest Output Power, 12.5 kHz



400.0125 MHz, Lowest Output Power, 12.5 kHz



450.0125 MHz, Highest Output Power, 12.5 kHz



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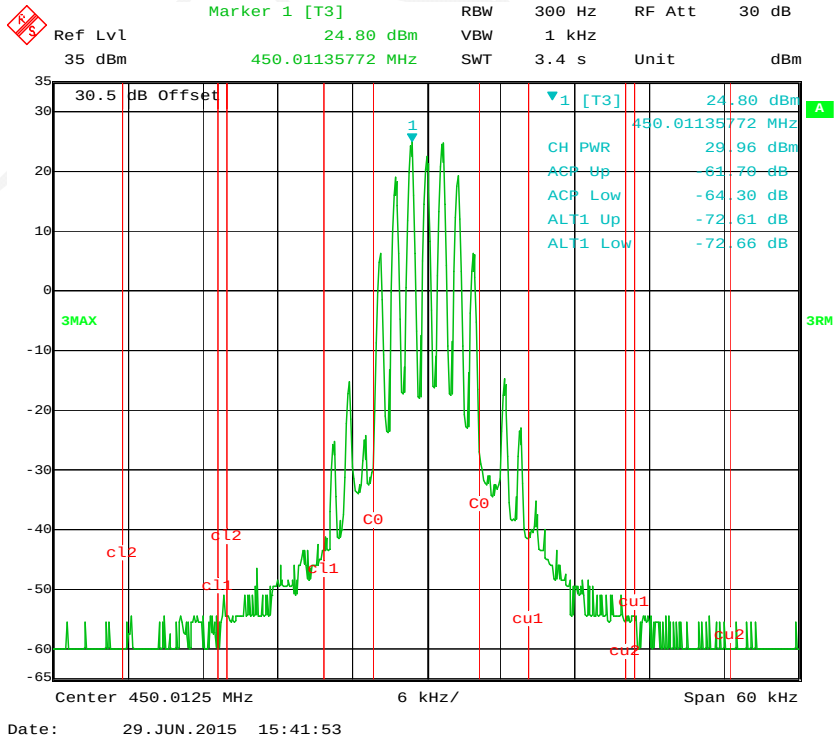
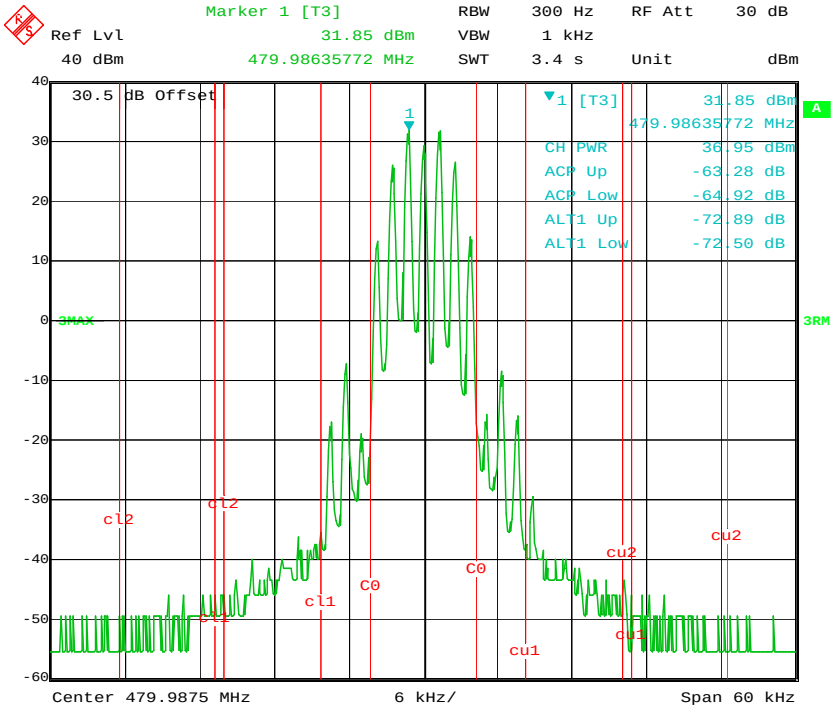
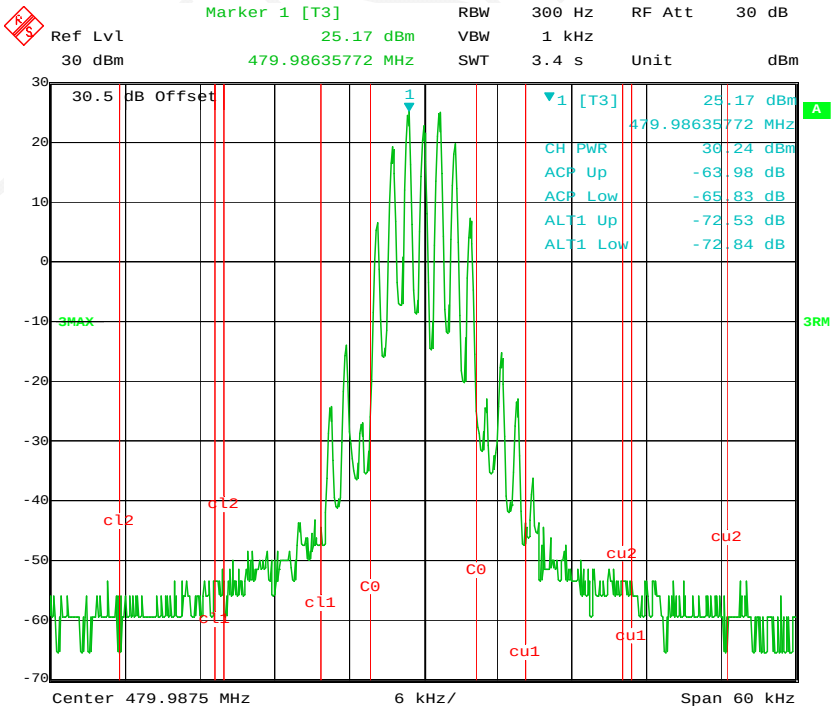
450.0125 MHz, Lowest Output Power, 12.5 kHz



479.9875 MHz, Highest Output Power, 12.5 kHz



479.9875 MHz, Lowest Output Power, 12.5 kHz



ETSI EN 300 086-2 V1.3.1 (2010-06) §4.2.5 – UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN

Applicable Standard

According to ETSI EN ETSI EN 300 086-1 V1.4.1 (2010-06) §7.6.1, Spurious emissions are emissions at frequencies other than those of the carrier and sidebands associated with normal modulation.

The level of spurious emissions shall be measured by:
either:
a) their power level in a specified load (conducted spurious emission); and
b) their effective radiated power when radiated by the cabinet and structure of the equipment (cabinet radiation); or
c) their effective radiated power when radiated by the cabinet and by the integral antenna, in the case of hand portable equipment fitted with such an antenna and no external RF connector.

NOTE: i.e. ((a and b) or c).

Limit:

The power of any spurious emission shall not exceed the values given in tables 5a and 5b.

Table 5a: Conducted emissions

Frequency range	Tx operating	Tx standby
9 kHz to 1 GHz	0,25 µW (-36 dBm)	2,0 nW (-57 dBm)
above 1 GHz to 4 GHz, or above 1 GHz to 12,75 GHz	1,00 µW (-30 dBm)	20 nW (-47 dBm)

Table 5b: Radiated emissions

Frequency range	Tx operating	Tx standby
30 MHz to 1 GHz	0,25 µW (-36 dBm)	2,0 nW (-57 dBm)
above 1 GHz to 4 GHz, or above 1 GHz to 12,75 GHz	1,00 µW (-30 dBm)	20 nW (-47 dBm)

Method of Measurement

According to ETSI EN 300 086-1 V1.4.1 (2010-06) §7.6.2&§7.6.3

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Shenzhen) is 5.91 dB for 30MHz-1GHz.and 4.92 dB for above 1GHz, and it will not be taken into consideration for the test data recorded in the report.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052304	2012-12-01	2015-11-30
Sunol Sciences	Broadband Antenna	JB3	A111513	2014-06-18	2017-06-17
Rohde & Schwarz	Signal Analyzer	FSIQ26	837405/023	2014-08-22	2015-08-22
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2014-11-03	2015-11-03
Mini-Circuits	Amplifier	ZVA-183-S+	5969001149	2015-04-23	2016-04-23
HP	Signal Generator	8657A	3217A04699	2014-12-19	2015-12-18
HP	Amplifier	8447E	1937A01046	2014-09-30	2015-09-30
HP	Synthesized Sweeper	8341B	2624A00116	2015-05-09	2016-05-09
COM POWER	Dipole Antenna	AD-100	041000	2015-06-06	2016-06-05
A.H. System	Horn Antenna	SAS-200/571	135	2013-02-11	2016-02-10

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24℃
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li from 2015-06-07 to 2015-07-06.

Test Result: Pass

Please refer to the following tables

Radiated spurious emissions

Test mode: Transmitting

Frequency (MHz)	Receiver Reading (dBμV)	Turn Table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	EN 300 086-1	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
Frequency: 400.0125 MHz, Channel spacing: 12.5 kHz										
800.03	47.87	111	2.3	H	-49.1	0.67	0	-49.77	-36	13.77
800.03	55.69	6	1.9	V	-41.3	0.67	0	-41.97	-36	5.97
1200.04	60.79	149	2.1	H	-39.5	1.50	6.20	-34.80	-30	4.80
1200.04	47.65	54	1.8	V	-52.9	1.50	6.20	-48.20	-30	18.20
1600.05	38.66	137	1.8	H	-56.8	1.30	6.70	-51.40	-30	21.40
1600.05	41.87	218	2.4	V	-58.4	1.30	6.70	-53.00	-30	23.00
Frequency: 450.0125 MHz, Channel spacing: 12.5 kHz										
900.03	47.99	216	1.5	H	-49.0	0.70	0	-49.70	-36	13.70
900.03	56.46	121	1.4	V	-40.5	0.70	0	-41.20	-36	5.20
1350.04	60.91	306	1.2	H	-38.5	1.20	6.40	-33.30	-30	3.30
1350.04	47.98	157	1.5	V	-52.3	1.20	6.40	-47.10	-30	17.10
1800.05	38.74	34	1.8	H	-58.1	1.40	7.10	-52.40	-30	12.40
1800.05	42.19	10	1.3	V	-54.9	1.40	7.10	-49.20	-30	19.20
Frequency: 479.9875 MHz, Channel spacing: 12.5 kHz										
959.98	47.34	261	2.1	H	-49.7	0.74	0	-50.44	-36	14.44
959.98	55.91	357	2.1	V	-41.1	0.74	0	-41.84	-36	5.84
1439.96	60.66	122	1.5	H	-38.8	1.20	6.40	-33.60	-30	3.60
1439.96	47.61	4	2.0	V	-52.7	1.20	6.40	-47.50	-30	17.50
1919.95	38.63	132	2.4	H	-58.1	1.40	7.30	-52.20	-30	22.20
1919.95	41.82	298	1.0	V	-53.3	1.40	7.30	-47.40	-30	17.40

Test mode: Standby

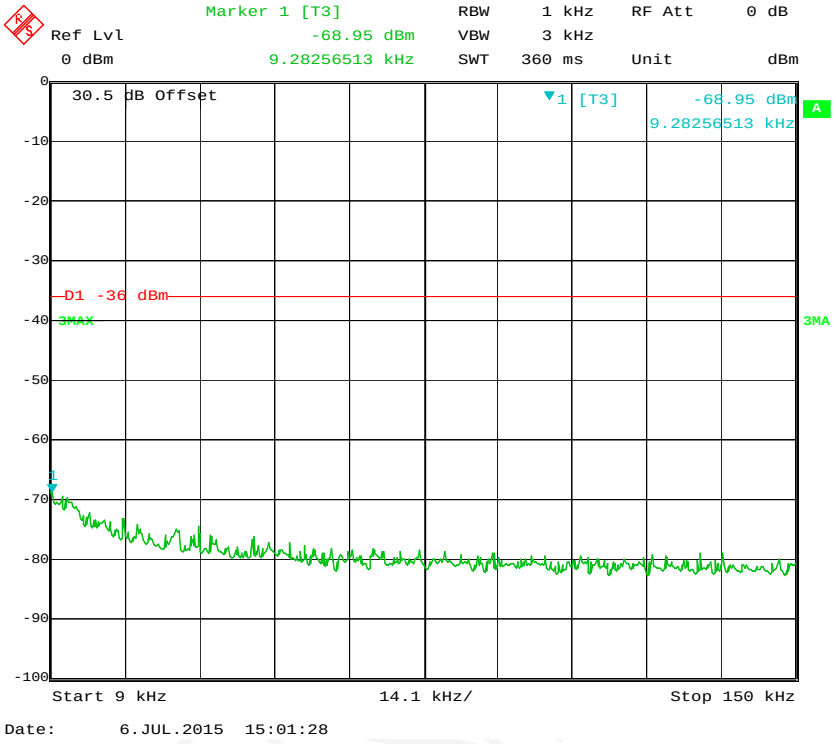
Frequency (MHz)	Receiver Reading (dBμV)	Turn Table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	EN 300 086-1	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
154.70	30.20	299	2.1	H	-66.8	0.27	0	-67.07	-57	10.07
154.70	31.16	268	1.3	V	-65.8	0.27	0	-66.07	-57	9.07
1401.38	35.42	62	1.8	H	-64.0	1.23	6.40	-58.83	-47	11.83
1401.38	34.67	115	2.3	V	-65.7	1.23	6.40	-60.53	-47	13.53

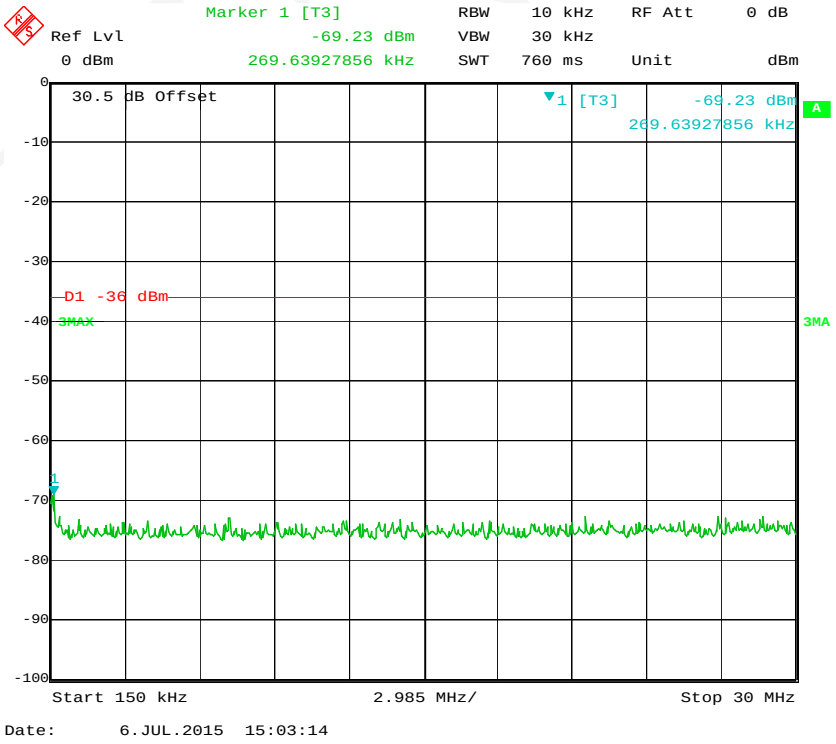
Note:
1) Absolute Level = SG Level - Cable loss + Antenna Gain
2) Margin = Limit- Absolute Level

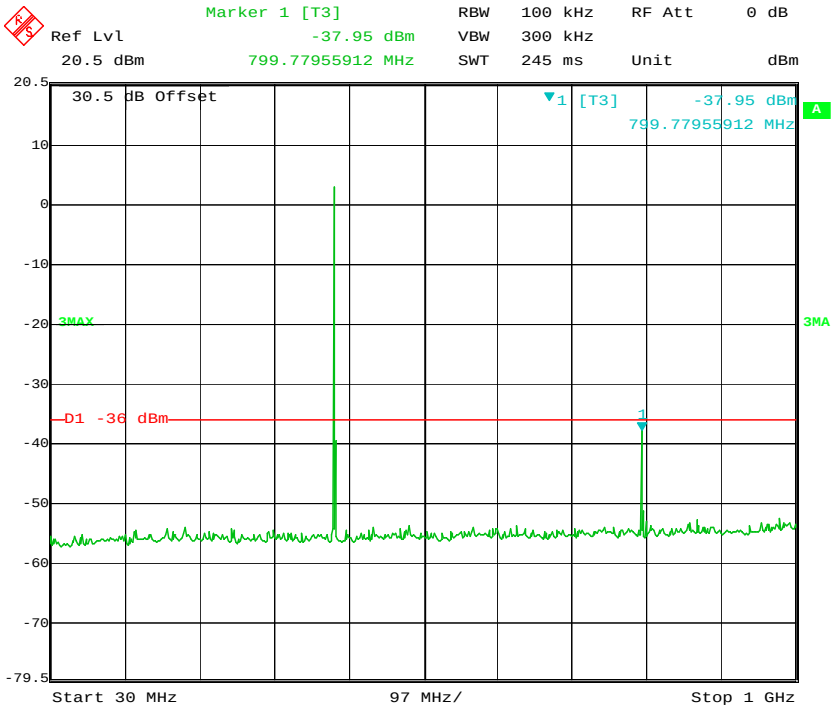
Conducted Spurious Emission

Test mode: Transmitting

400.0125 MHz at 12.5 kHz



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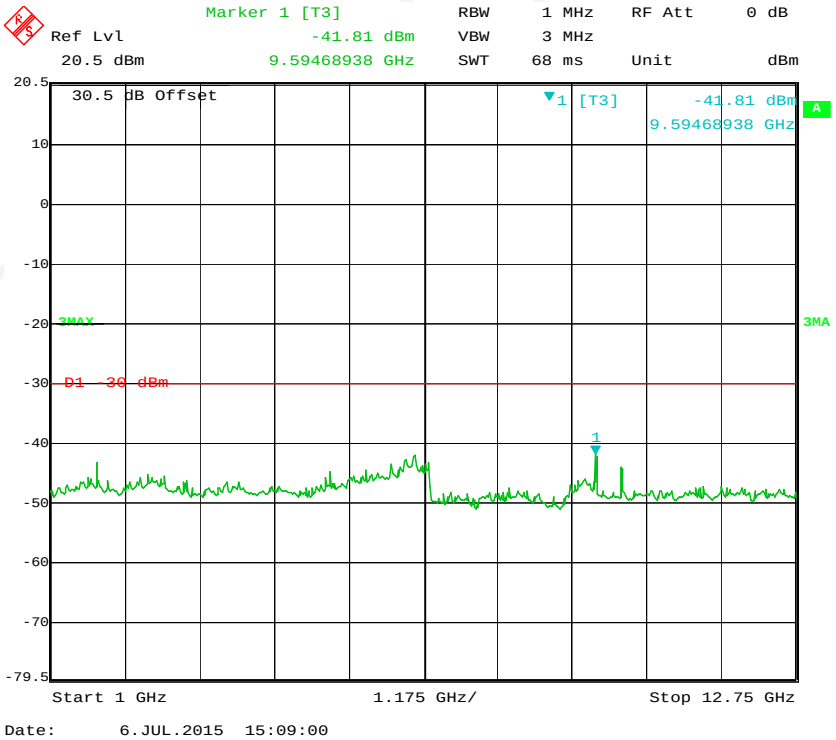
RBW 100 kHz
RF Att 0 dB
Ref Lvl -37.95 dBm
VBW 300 kHz
20.5 dBm 799.77955912 MHz
SWT 245 ms
Unit dBm
30.5 dB Offset
1 [T3] -37.95 dBm
799.77955912 MHz
3MAX
3MA
D1 -36 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 6.JUL.2015 15:06:56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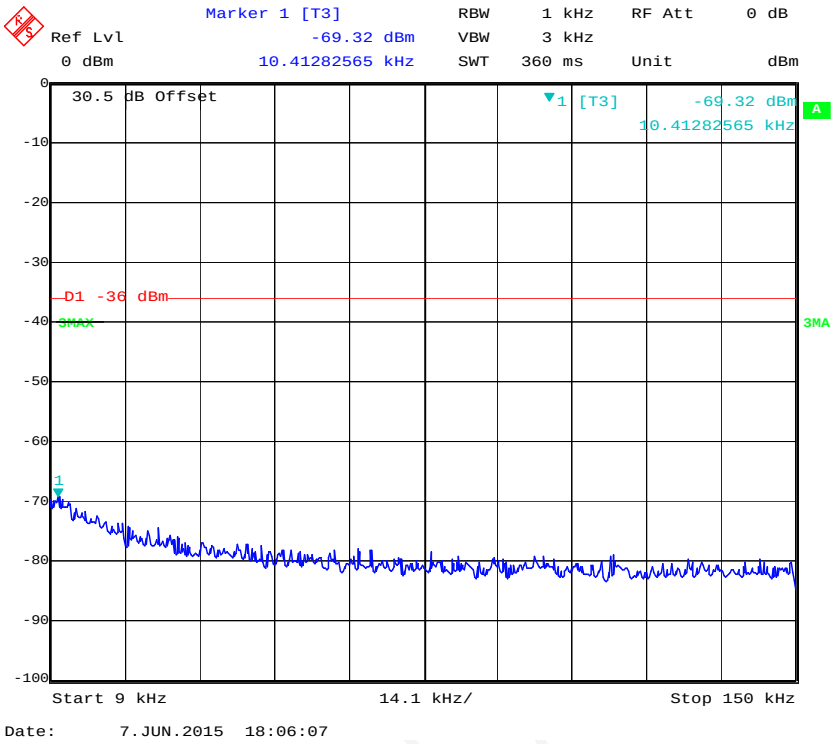
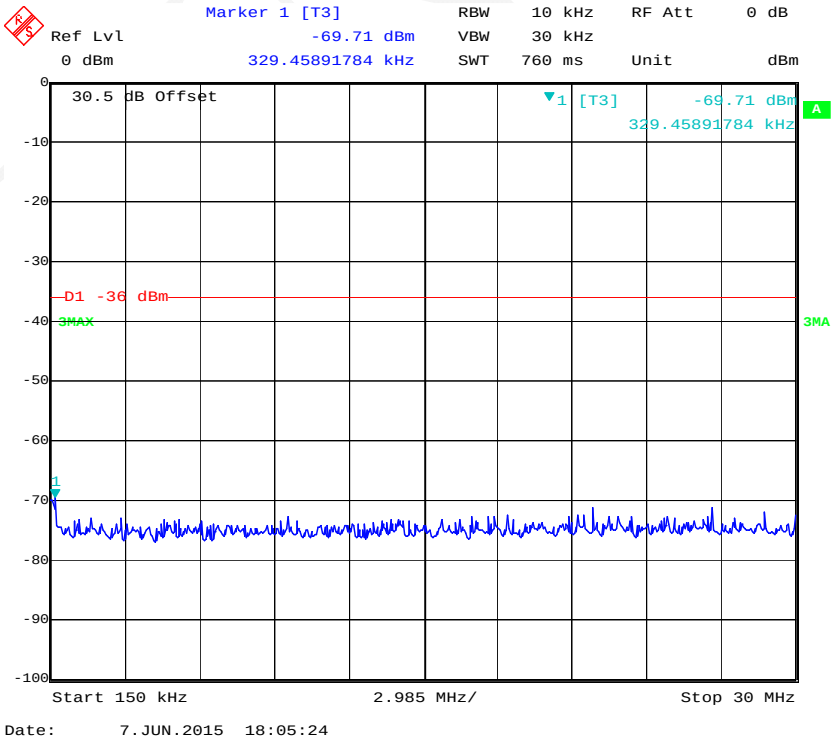
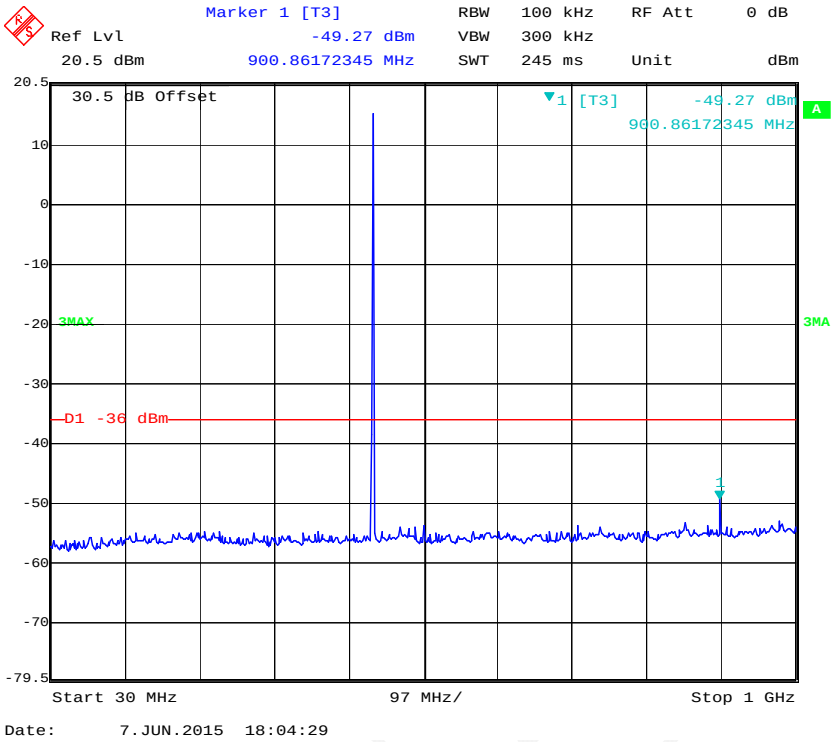
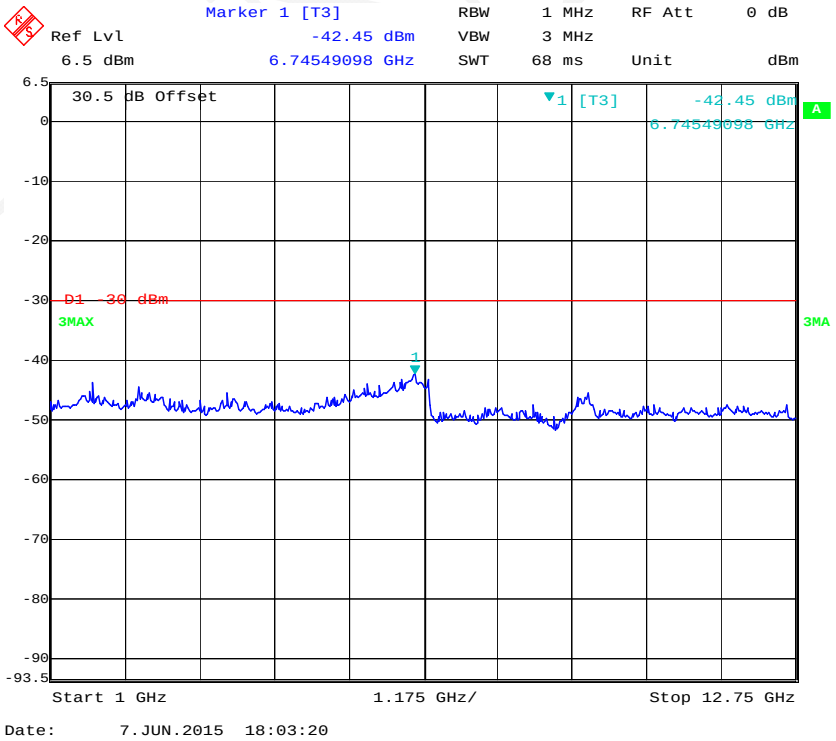
RBW 1 MHz
RF Att 0 dB
Ref Lvl -41.81 dBm
VBW 3 MHz
20.5 dBm 9.59468938 GHz
SWT 68 ms
Unit dBm
30.5 dB Offset
1 [T3] -41.81 dBm
9.59468938 GHz
3MAX
3MA
D1 -30 dBm
Start 1 GHz
1.175 GHz/
Stop 12.75 GHz
Date: 6.JUL.2015 15:09:00

450.0125 MHz at 12.5 kHz

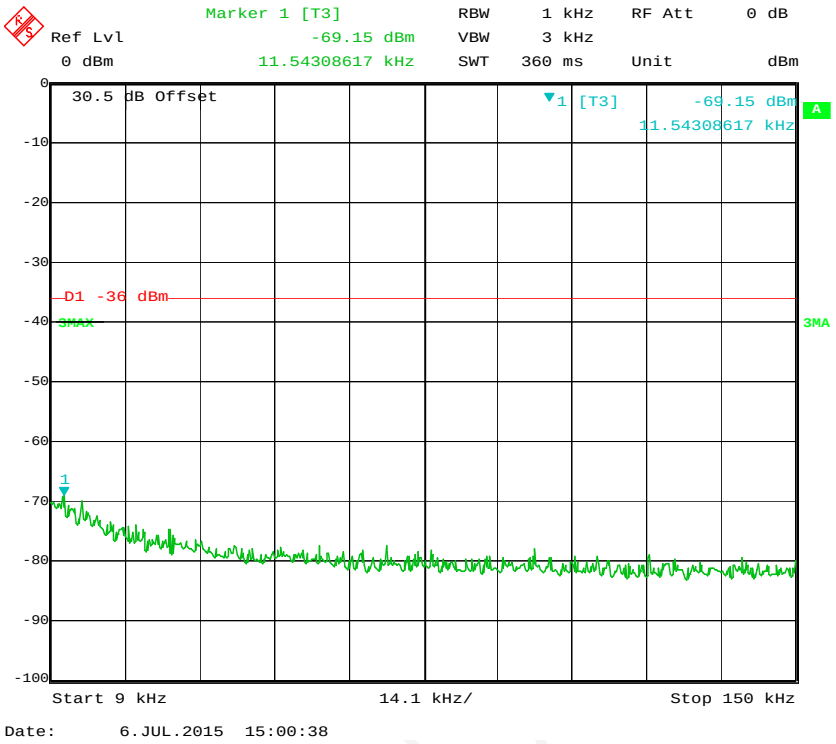


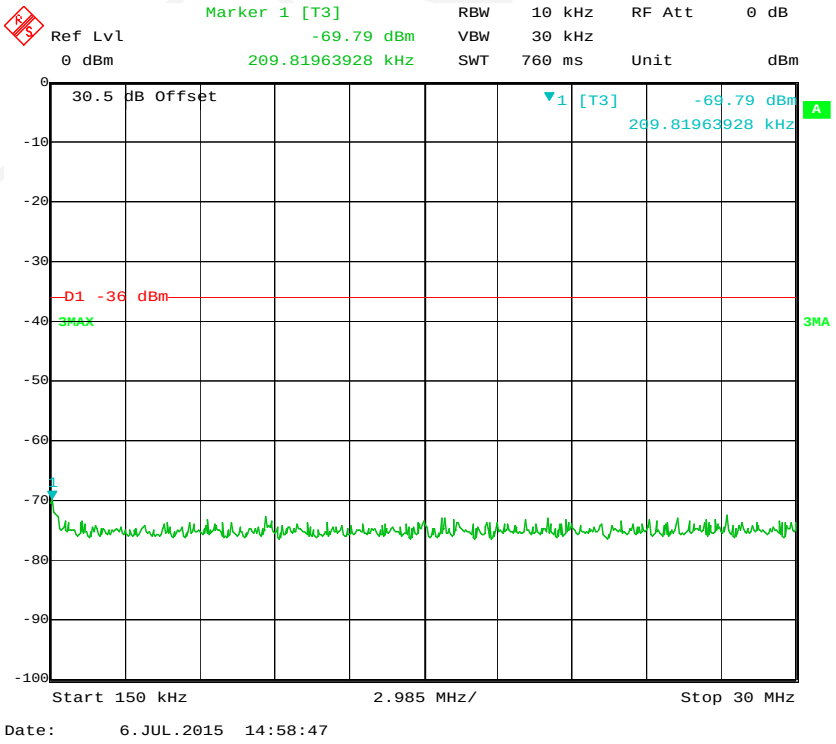


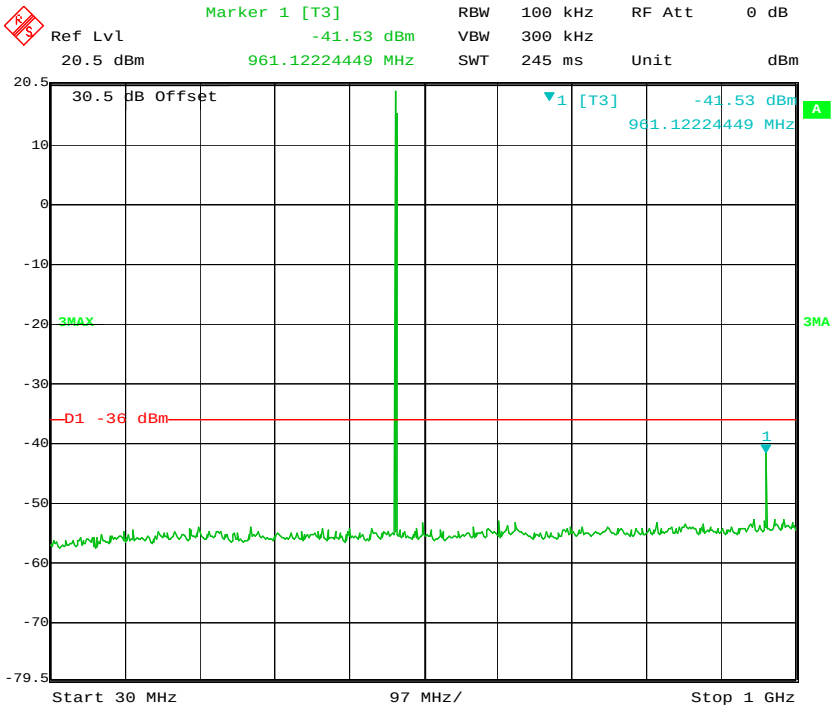

Marker 1 [T3]
RBW 100 kHz
RF Att 0 dB
Ref Lvl
-49.27 dBm
VBW 300 kHz
20.5 dBm
900.86172345 MHz
SWT 245 ms
Unit dBm
30.5 dB Offset
1 [T3] -49.27 dBm
900.86172345 MHz
A
3MAX
3MA
D1 -36 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 7.JUN.2015 18:04:29

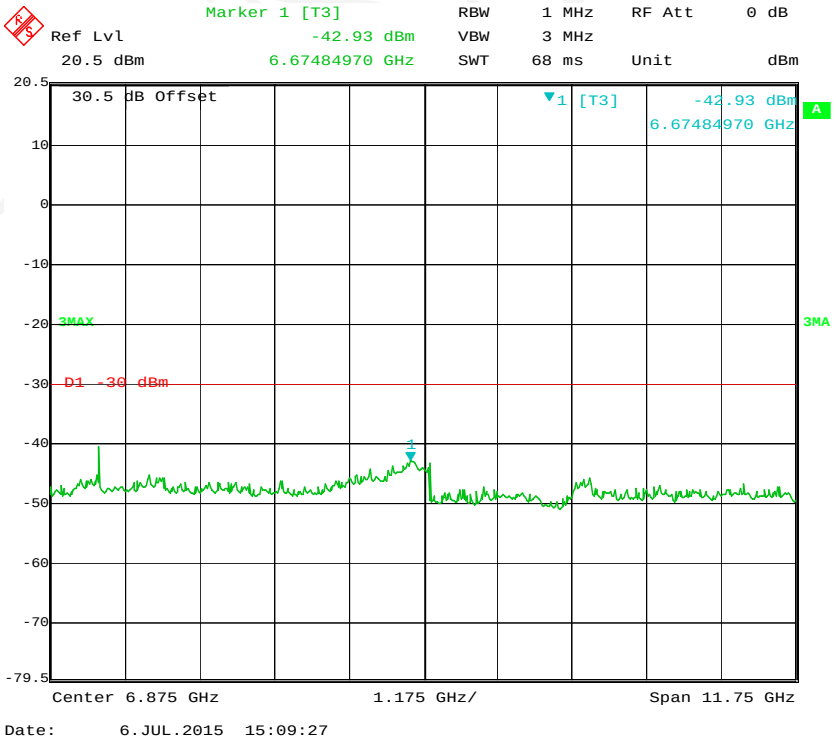

Marker 1 [T3]
RBW 1 MHz
RF Att 0 dB
Ref Lvl
-42.45 dBm
VBW 3 MHz
6.5 dBm
6.74549098 GHz
SWT 68 ms
Unit dBm
30.5 dB Offset
1 [T3] -42.45 dBm
6.74549098 GHz
A
D1 -30 dBm
3MAX
3MA
Start 1 GHz
1.175 GHz/
Stop 12.75 GHz
Date: 7.JUN.2015 18:03:20

479.0125 MHz at 12.5 kHz



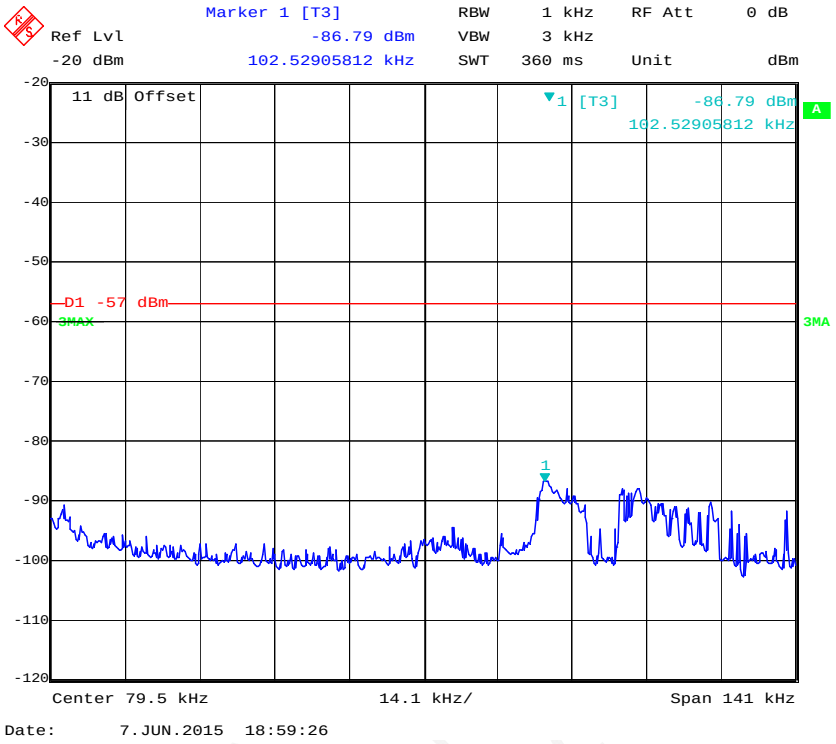


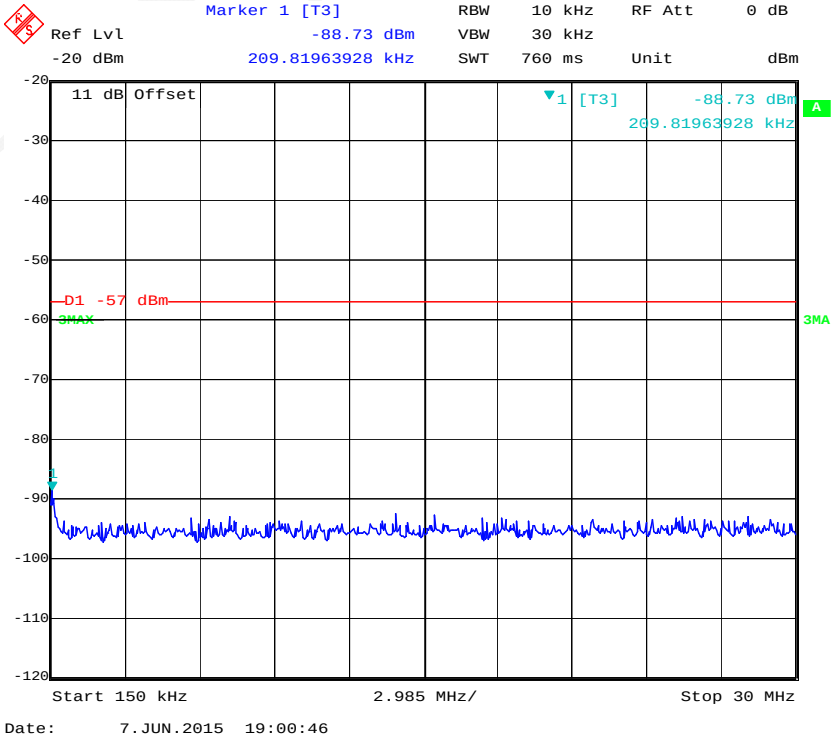

Marker 1 [T3]
RBW 100 kHz
RF Att 0 dB
Ref Lvl -41.53 dBm
VBW 300 kHz
20.5 dBm 961.12224449 MHz
SWT 245 ms
Unit dBm
30.5 dB Offset
1 [T3] -41.53 dBm
961.12224449 MHz
A
3MAX
3MA
D1 -36 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 6.JUL.2015 15:07:22

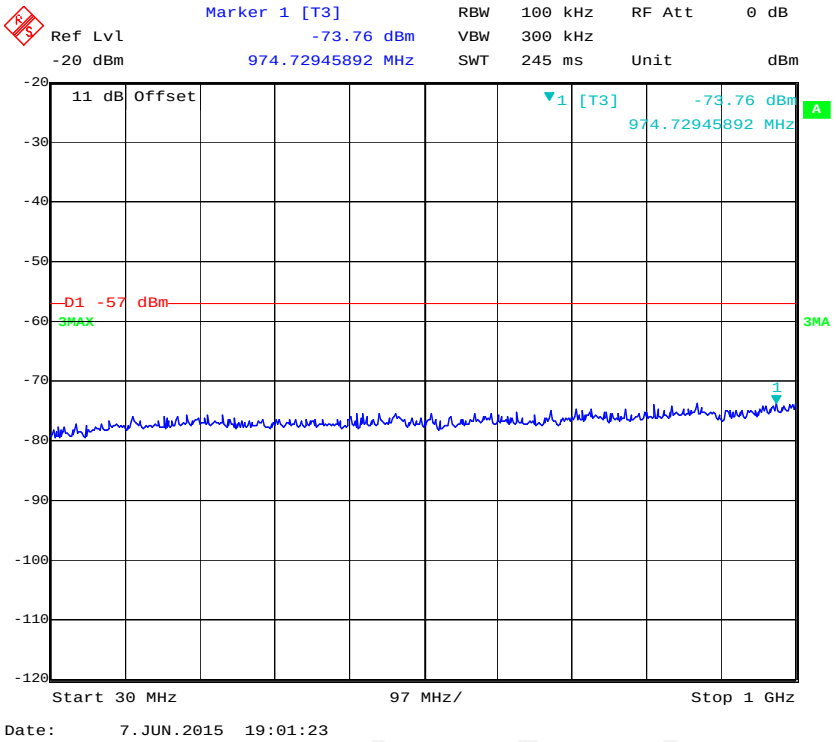

Marker 1 [T3]
RBW 1 MHz
RF Att 0 dB
Ref Lvl -42.93 dBm
VBW 3 MHz
20.5 dBm 6.67484970 GHz
SWT 68 ms
Unit dBm
30.5 dB Offset
1 [T3] -42.93 dBm
6.67484970 GHz
A
3MAX
3MA
D1 -30 dBm
Center 6.875 GHz
1.175 GHz/
Span 11.75 GHz
Date: 6.JUL.2015 15:09:27

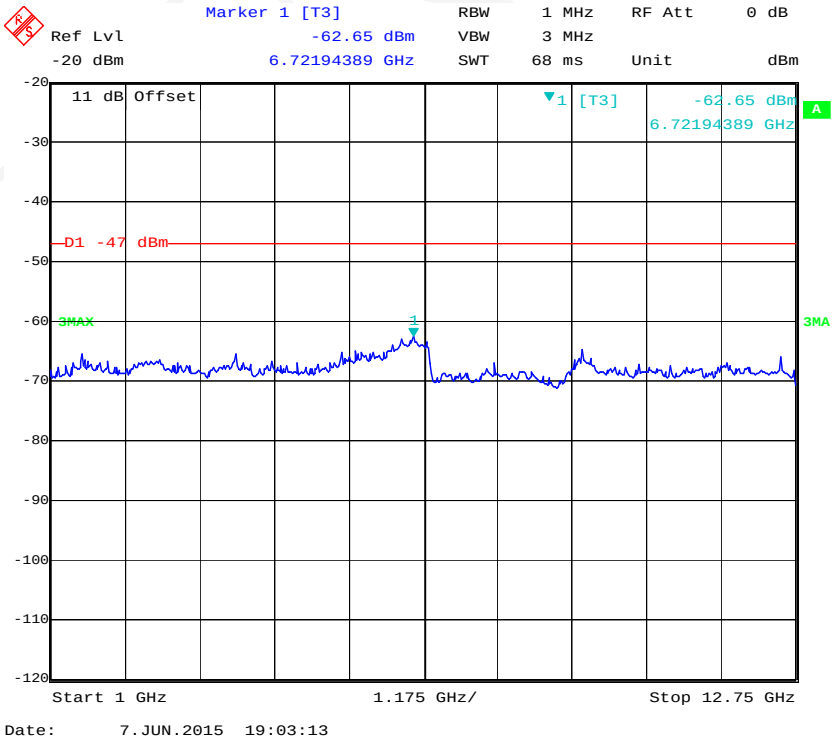
Test mode: Standby

450.0125 MHz at 12.5 kHz






Marker 1 [T3]
RBW 100 kHz
RF Att 0 dB
Ref Lvl
-73.76 dBm
VBW 300 kHz
-20 dBm
974.72945892 MHz
SWT 245 ms
Unit dBm
11 dB Offset
1 [T3]
-73.76 dBm
974.72945892 MHz
D1 -57 dBm
3MAX
3MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 7.JUN.2015 19:01:23


Marker 1 [T3]
RBW 1 MHz
RF Att 0 dB
Ref Lvl
-62.65 dBm
VBW 3 MHz
-20 dBm
6.72194389 GHz
SWT 68 ms
Unit dBm
11 dB Offset
1 [T3]
-62.65 dBm
6.72194389 GHz
D1 -47 dBm
3MAX
3MA
Start 1 GHz
1.175 GHz/
Stop 12.75 GHz
Date: 7.JUN.2015 19:03:13

ETSI EN 300 086-2 V1.3.1 (2010-06) §4.3.7 – RECEIVER SPURIOUS RADIATIONS

Standard Applicable

According to ETSI EN 300 086-1 V1.4.1 (2010-06) §8.8.1, Spurious radiations from the receiver are emissions at any frequency, radiated by the equipment and its antenna.

The level of spurious radiations shall be measured by:
either:
a) their power level in a specified load (conducted spurious emission); and
b) their effective radiated power when radiated by the cabinet and structure of the equipment (cabinet radiation); or
c) their effective radiated power when radiated by the cabinet and by the integral antenna, in the case of hand portable equipment fitted with such an antenna and no external RF connector.

NOTE: i.e. ((a and b) or c).

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Shenzhen) is 5.91 dB for 30MHz-1GHz.and 4.92 dB for above 1GHz, and it will not be taken into consideration for the test data recorded in the report.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052304	2012-12-01	2015-11-30
Sunol Sciences	Broadband Antenna	JB3	A111513	2014-06-18	2017-06-17
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2014-11-12	2015-11-12
Rohde & Schwarz	Signal Analyzer	FSIQ26	837405/023	2014-08-22	2015-08-22
Mini-Circuits	Amplifier	ZVA-183-S+	5969001149	2015-04-23	2016-04-23
HP	Signal Generator	8657A	3217A04699	2014-12-19	2015-12-18
HP	Amplifier	8447E	1937A01046	2014-09-30	2015-09-30
HP	Synthesized Sweeper	8341B	2624A00116	2015-05-09	2016-05-09
COM POWER	Dipole Antenna	AD-100	041000	NCR	NCR
A.H. System	Horn Antenna	SAS-200/571	135	2013-02-11	2016-02-10

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Procedure

The measurement arrangement in figure 13 shall be used.
The measurement procedure shall be as follows:

a) on a test site, fulfilling the requirements of annex A, the sample shall be placed at the specified height on the non-conducting support;
- the receiver shall be operated from a power source via a radio frequency filter to avoid radiation from the power leads;
b) the receiver shall be connected:
- to an artificial antenna for equipment having an external antenna connector; or
- to the integral antenna;
c) radiation of any spurious components shall be detected over the frequency range 30 MHz to 4 GHz;
d) at each frequency at which a component is detected, the sample shall be rotated to obtain maximum response
and the effective radiated power of that component determined by a substitution measurement, using the measurement arrangement of figure 14;
e) the value of the effective radiated power of that component shall be recorded;
f) the measurement shall be repeated with the test antenna in the orthogonal polarization plane.

Test Data

Environmental Conditions

Temperature:	21 ℃
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li on 2015-06-07.

Test Result: Pass

Please refer to the following table.

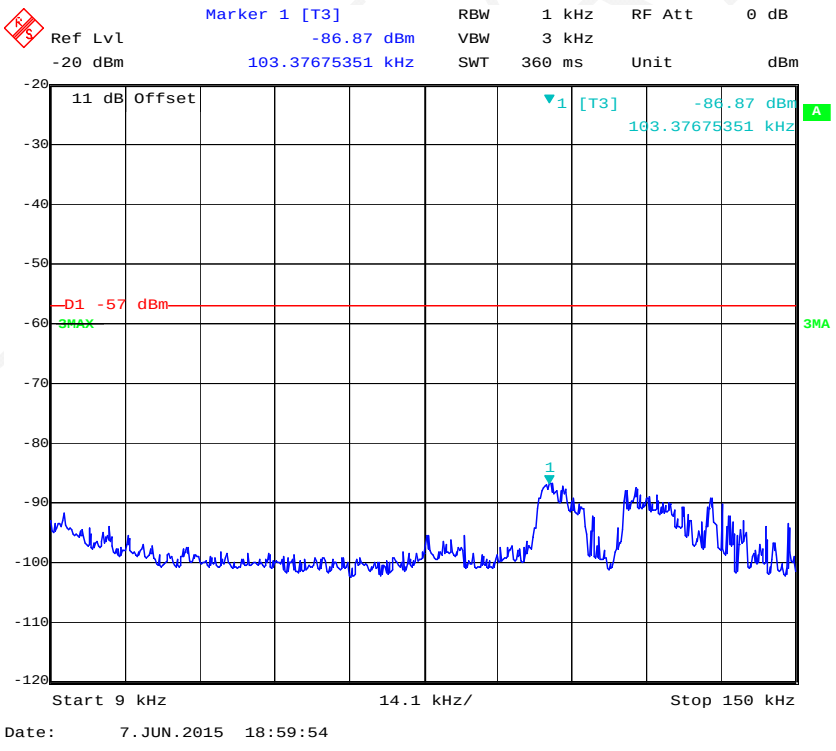
Test mode: Receiving

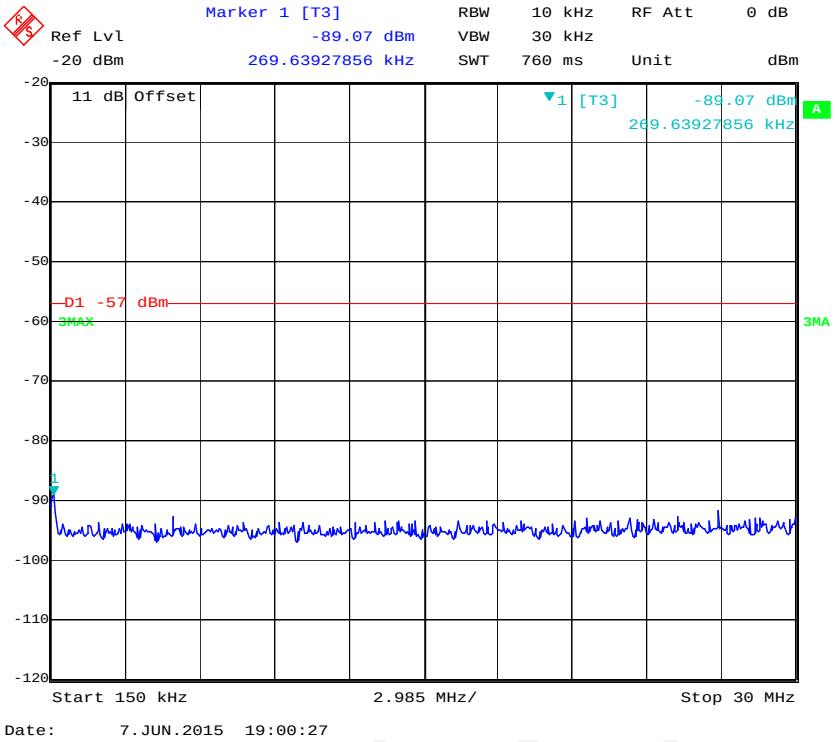
Frequency (MHz)	Receiver Reading (dBμV)	Turn Table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	EN 300 086-1	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
154.70	31.21	30	2.0	H	-65.8	0.27	0	-66.07	-57	9.07
154.70	31.93	310	1.7	V	-65.1	0.27	0	-65.37	-57	8.37
1401.38	34.40	222	1.7	H	-65.1	1.23	6.40	-59.93	-47	12.93
1401.38	34.17	175	1.5	V	-66.2	1.23	6.40	-61.03	-47	14.03

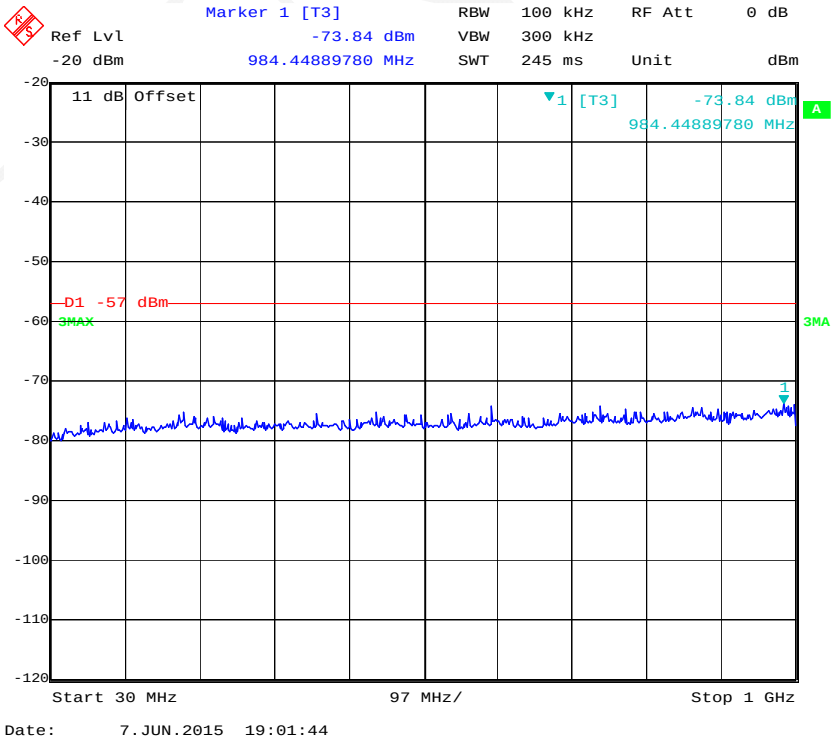
Note:
1) Absolute Level = SG Level - Cable loss + Antenna Gain
2) Margin = Limit- Absolute Level

Conducted Spurious Emission

Test mode: Receiving




Marker 1 [T3]
RBW 10 kHz
RF Att 0 dB
Ref Lvl
-89.07 dBm
VBW 30 kHz
-20 dBm
269.63927856 kHz
SWT 760 ms
Unit dBm
11 dB Offset
1 [T3] -89.07 dBm
269.63927856 kHz
D1 -57 dBm
3MAX
3MA
Start 150 kHz
2.985 MHz/
Stop 30 MHz
Date: 7.JUN.2015 19:00:27


Marker 1 [T3]
RBW 100 kHz
RF Att 0 dB
Ref Lvl
-73.84 dBm
VBW 300 kHz
-20 dBm
984.44889780 MHz
SWT 245 ms
Unit dBm
11 dB Offset
1 [T3] -73.84 dBm
984.44889780 MHz
D1 -57 dBm
3MAX
3MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 7.JUN.2015 19:01:44

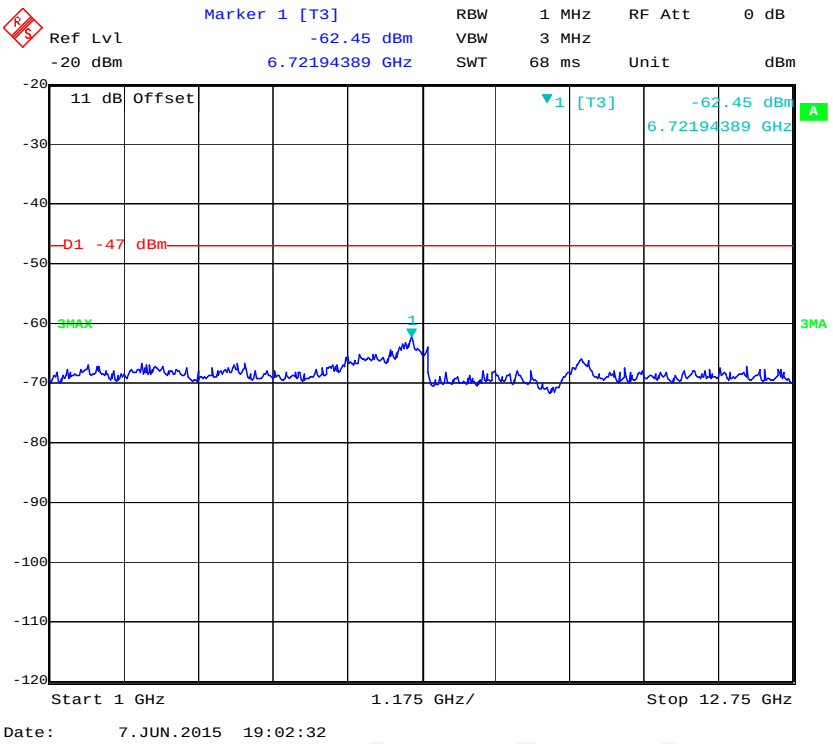

Marker 1 [T3]
RBW 1 MHz
RF Att 0 dB
Ref Lvl
-62.45 dBm
VBW 3 MHz
-20 dBm
6.72194389 GHz
SWT 68 ms
Unit dBm
11 dB Offset
1 [T3]
-62.45 dBm
6.72194389 GHz
A
D1 -47 dBm
3MAX
3MA
Start 1 GHz
1.175 GHz/
Stop 12.75 GHz
Date: 7.JUN.2015 19:02:32

EXHIBIT A - CE PRODUCT LABELING

CE Label Format

CE 1313 ①

Specifications: The marking set out above must be affixed to the apparatus or to its data plate and have a minimum height of 5 mm. The elements should be easily readable and indelible. They may be placed anywhere on the apparatus case or in its battery compartment. No tool should be needed to view the marking.
1313: 4 digit notified body number

Note: The label should contain the below content:

① The name of the manufacturer or the person responsible for placing the apparatus on the market
② Type
③ Batch and/or serial numbers

Proposed Label Location on EUT

EXHIBIT B - EUT PHOTOGRAPHS

EUT – Front View

EUT – Rear View

EUT – Top View

EUT – Bottom View

EUT – Left View

EUT – Right View

EUT – Cover off View 1

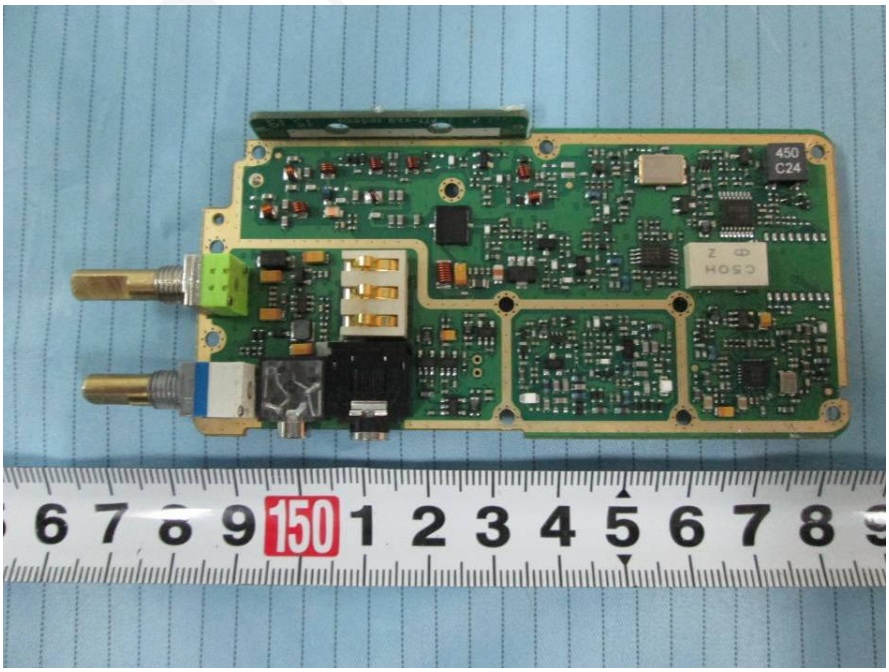
EUT – Cover off View 2

EUT –Cover off View 3

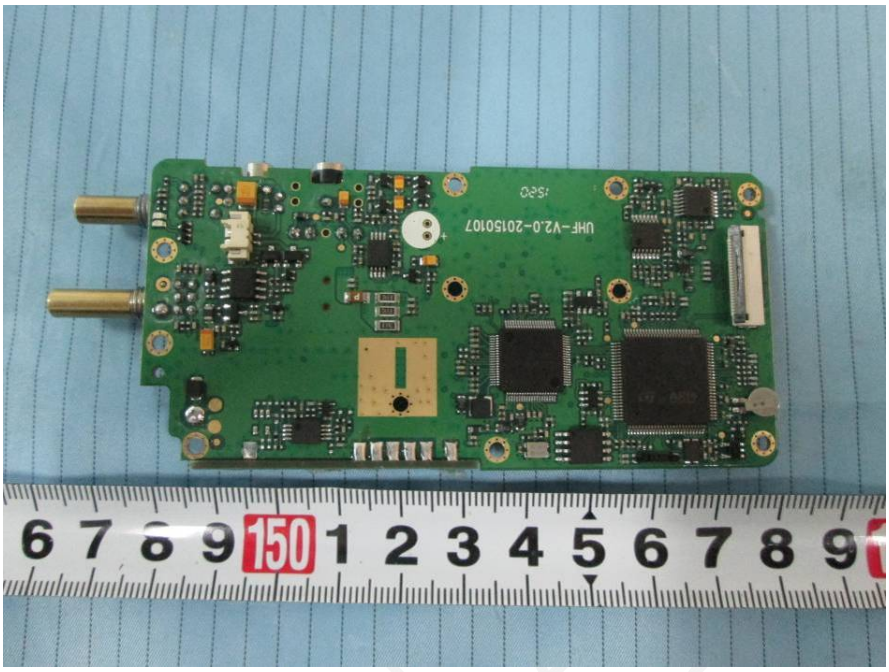
EUT –Cover off View 4

EUT –Cover off View 5

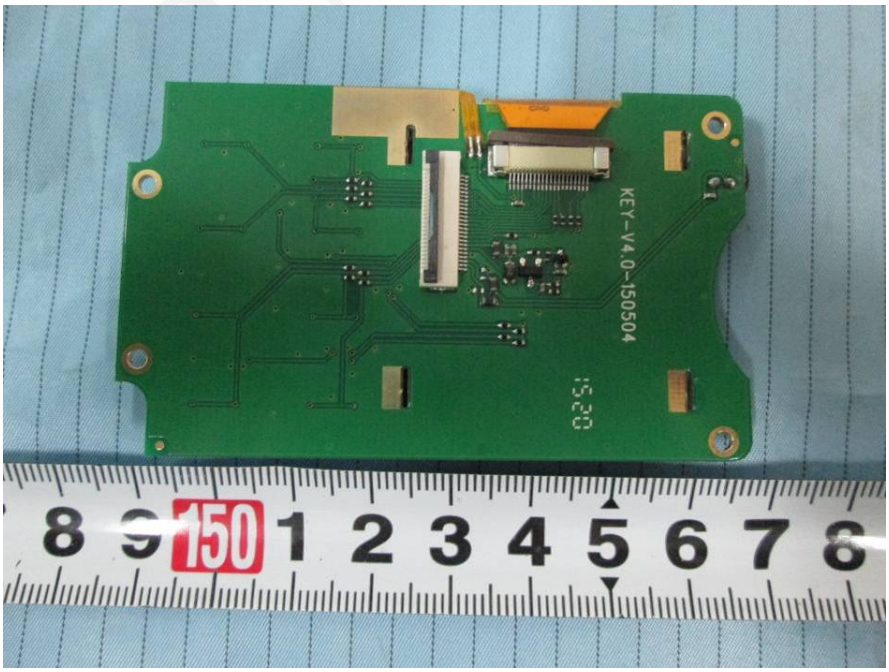
EUT – Main Board 1 View



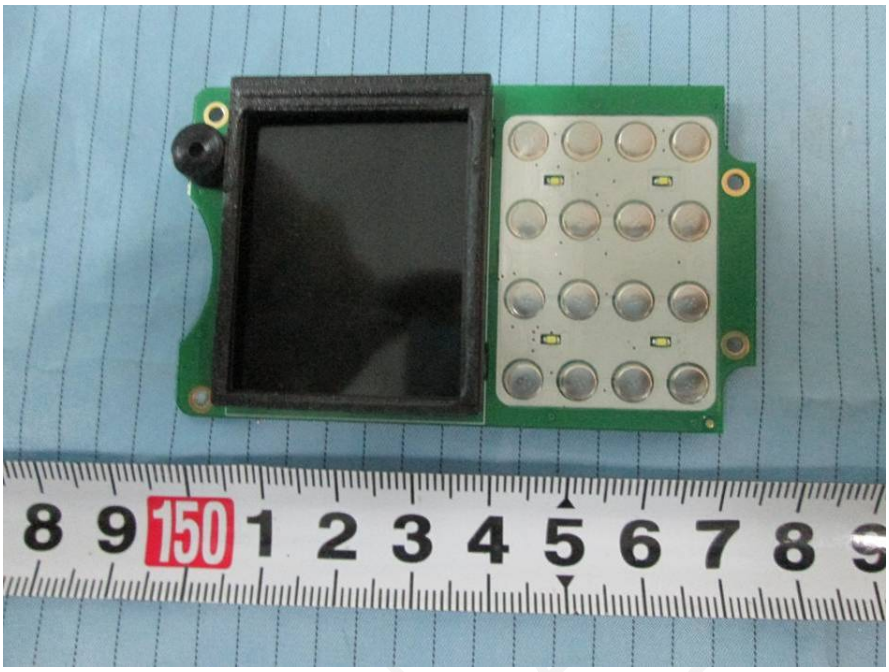
EUT – Main Board 2 View



EUT – Main Board 3 View

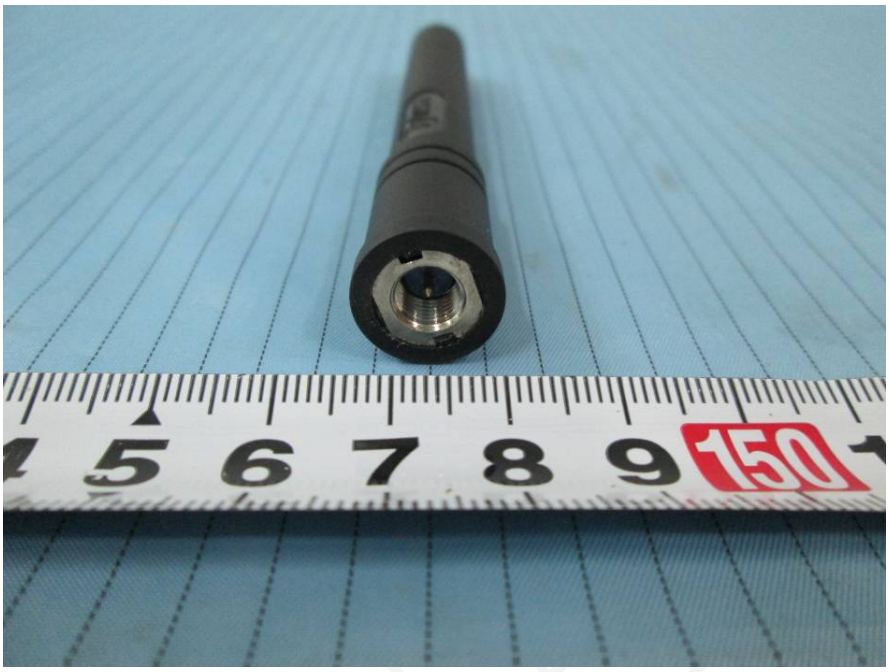


EUT – Main Board 4 View



EUT – Antenna View

EUT – Antenna Port View



EUT – Battery Front View

EUT – Battery Back View

EUT – Battery Lable View

EUT – Chip View

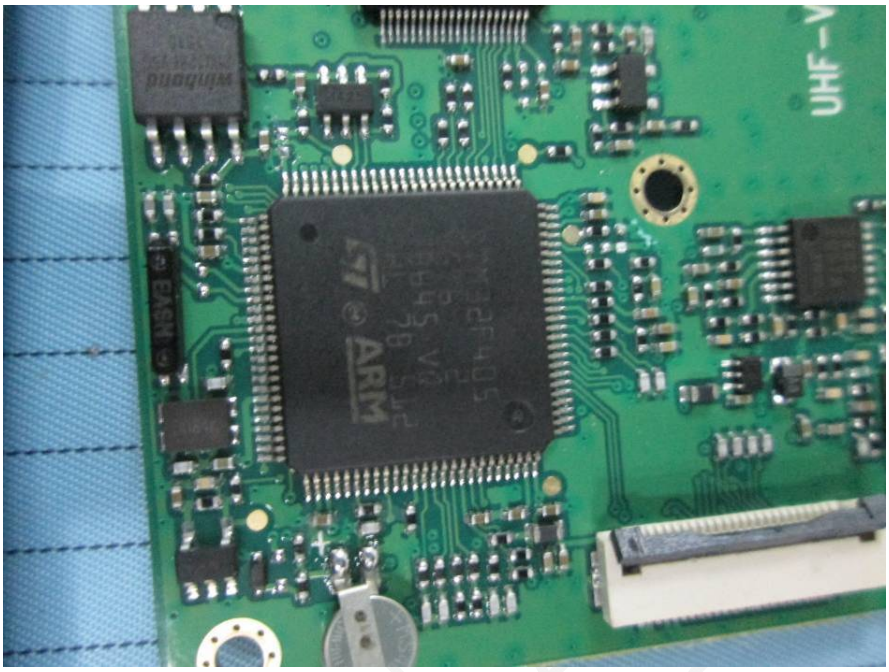


EXHIBIT C - TEST SETUP PHOTOGRAPHS

Radiated Spurious Emissions View (Below 1 GHz)

Radiated Spurious Emissions View (Above 1 GHz)

PRODUCT SIMILARITY DECLARATION LETTER

TYT ELECTRONICS CO., LTD
Block 39-1, Optoelectronics-information industry b, Nan'an, quanzhou, Fujian China
Fax: +86 595-27770858 Fax: +86 595-27770857

2015-7-8

Product Similarity Declaration

To Whom It May Concern,

We, TYT ELECTRONICS CO., LTD, hereby declare that we have a product named as DMR (Model number: MD-380) was tested by BACL, meanwhile, for our marketing purpose, we would like to list a series models (MD-390 MD-368 MD-398) on reports and certificate, all the models are identical schematics, just model number is different. No other changes are made to them.
We confirm that all information above is true, and we'll be responsible for all the consequences. Please contact me if you have any question.

Sincerely,

Jiamao Lin

Manager

******* END OF REPORT *******